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BIBLIOGRAPHY OF Technical Reports

July 10, 1953 Vol. 20, No. 1

CHEMICALS AND ALLIED PRODUCTS

Drugs and Pharmaceuticals

Evaluation of clinical tests for atherosclerosis: Role of adenosine-5-monophosphate in cholesterol metabolism, by William W. Calhoun, Lawrence J. Milch, and Robert F. Redmond, and the Cardiovascular Research Group. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jan 1953. 4p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109073

Adenosine-5-monophosphate (AMP) was administered to 5-month-old, nonatherosclerotic cockerels over a 14-day period and found to be associated with significantly lowered plasma and aortal cholesterol concentrations. The role of AMP in lipoprotein metabolism is discussed. AAF SAM Proj. No. 21-1601-0007, Report no. 1.

Influence of dehydration on the toxicity to mice of diisopropyl fluorophosphate (DFP) and potassium cyanide (KCN), by E. J. Esposito. U. S. Chemical Corps. Medical Laboratories, Army Chemical Center, Md. Feb 1953. 14p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109179

Project no.: 4-08-02-005. Test Program no.: T24. 1. Diisopropyl fluorophosphate - Toxicity - Effects of dehydration 2. Potassium cyanide - Toxicity - Effects of dehydration 3. Mice - Dehydration - Effects of drugs 4. Dehydration - Effects of drugs 5. CC MD RR 161.

Nicotiana rustica: Distribution of nicotine in the plant, loss of nicotine during drying, and methods of analyses for nicotine and moisture, by E. G. Beinhart, C. F. Woodward, C. O. Willets, C. Riccuiti, C. O. Badgett and J. J. Willaman. U. S. Bureau of Agricultural and Industrial Chemistry. Eastern Regional Research Laboratory, Philadelphia, Pa. Feb 1953. 38p photos, drawings, graphs, tables Available from U. S. Department of Agriculture, Eastern Regional Research Laboratory, Philadelphia 18, Pa. PB 109394

1. Nicotiana rustica 2. Nicotine - Analysis 3. Nicotine - Losses 4. AIC 335.

Agricultural Chemicals

Volatile compounds as fungicides for electronic equipment, part I, by Wilson M. Whaley, W. L. Clark, W. E. Weaver, K. L. Englund, and J. M. Leonard. U. S. Naval Research Laboratory. Nov 1945. 23p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109308

Fifty-four chemical agents have been evaluated as volatile fungicides by techniques designed to examine fungicidity, corrosiveness, volatility, and their effects on insulation resistance and other properties of plastics. A survey of fungicidal treatments for electronic equipment is included. NRL P-2653.

Plastics and Plasticizers

Austausch der wissenschaftlichen arbeiten auf dem Zetko-gebiet im Mai 1941: Uber guanamine (Production of guanamines), by Dr. Brunner. I. G. Farbenindustrie A. G., Frankfurt, Ger. May 1941. 6f (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Enlargement Print $2.50. PB 109207

English abstract included. Abstract available as PB 109207s. 2p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. 1. S-Triazine, 2,4-Diamino - Preparation - Germany 2. Resins, Guanamine derivatives - Germany 3. Patents - Germany J66996 IVc/12p

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4. ZETKO (Zwischenprodukt-Kommission) 5. Micro BIOS DOCS 1246 6. Micro BIOS FD 2116/46, Frames 510000728-510000731.

Development of heat-resistant interlayer material for laminated glass. Bi-monthly progress report, Sep 24-Nov 24, 1951 under Contract AF33(038)-16240, by Johan Bjorksten. Bjorksten Research Laboratories, Inc., Madison, Wisconsin. Nov 1951. 22p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109176

An increase in "Flexol 3GH" plasticizer to 35-40% in the cross-linked polyvinyl interlayer has been found desirable for improved shatter resistance at -65°F. The optimum additives for increasing the working temperature range of polyvinyl butyral interlayers are "Uformite MX61" (a triazine-formaldehyde resin), phenol, thymol, or "Santolite MS" (p-toluene sulfonamide-formaldehyde resin). These are used with 0.05% p-toluene sulfonic acid and 35-40% "Flexol 3GH" plasticizer. Concentrations of less than 0.1% "Uformite MX61" with 0.05% p-toluene sulfonic acid are effective in curing the interlayer after 1/2 hr at 300°F.

Effect of various pigments on the electrical properties of synthetic resin insulation, by M. A. Elliott. U. S. Naval Research Laboratory. Feb 1944. 26p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109284

In multi-conductor cables of the synthetic resin type it is necessary to incorporate various pigments into the insulation in order that each conductor can be readily identified. A series of measurements were made on each of eight colors of two types of vinyl chloride-acetate copolymers (Vinylites). NRL P-2250.

Investigation of the properties of foundry cores made with two types of urea formaldehyde binders, by J. Robert Kattus and Robert E. Morey. U. S. Naval Research Laboratory. Jun 1946. 27p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109428

A series of tests was made in which two types of these binders were compared with a high-grade commercial core-oil. The synthetic resin binders used were "Aqua-set A", a liquid, and "Aqua-set 900", a powdered solid. "Linoil" was used for comparison purposes. Tests were made to determine green strength and green permeability, baked strength and baked permeability, elevated temperature compressive strength, and the effect of baking time, baking temperature, and humidity during storage on the compressive strength of the cores. NRL M-2874.

Kunstharze. Rohmaterialen-verbrauch (Synthetic resins. Consumption figures of raw materials). I. G. Farbenindustrie A. G., Frankfurt, Ger. 1943. 110f (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Enlargement Print $15.00, PB 109208

English abstract included. Abstract available as PB 109208s. 3p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Resins, Synthetic - Raw materials - Germany
2. Resins, Synthetic - Production - Germany
3. Micro BIOS FD 2978/47, Frames 972-986.

Kunststoff-bericht jahrg. 11, hft. 6 (Report on synthetic materials, vol. 11, no. 6). I. G. Farbenindustrie A. G., Höchst, Ger. Jun 1940. 120f (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Enlargement Print $16.25. PB 109209

English abstract included. Abstract available as PB 109209s. 2p. Available from Library Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Plastics - Bibliography - Germany 2. Synthetic materials - Bibliography - Germany 3. Micro BIOS FD 3508/47, Frames 1-118.

Preliminary study of resins and poisons to determine their applicability to antifouling compositions, by Allen L. Alexander. U. S. Naval Research Laboratory. Jan 1941. 44p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109454

1. Plastics, Acrylic - Properties 2. Plastics, Acrylic - Materials 3. Coatings, Anti-fouling 4. Coatings, Anti-fouling - Effect on aluminum 5. NRL P-1680.

Report of test of M. F. Formica, submitted by the Formica Insulation Co., prepared by H. F. Hastings U. S. Naval Research Laboratory. Oct 1942. 9p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.25. PB 109245

1. Insulating materials - Tests 2. M. F. Formica (Trade name) 3. Plastics, Laminated - Tests 4. Formica Insulation Co., Cincinnati, Ohio 5. NRL R-1941 6. NAVSHIPS Prob M 1-30.

Paints, Varnishes and Lacquers

Development of test method for estimating solvent power and aromatic and naphthenic content of thinners used in Navy aeronautical finishes. U. S. Naval Research Laboratory. First report of progress, Apr-Aug 1944, by D. E. Neunherz. Aug 1944. 35p graphs, tables Available from Library of

Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109291

Petroleum thinners of the AN-VV-N-96 Type I contain primarily three classes of hydrocarbons: aromatics, naphthenes, and paraffins. Data are presented on the specific gravity, refractive index, mixed aniline point and solvent power (as determined by the kauri butanol method) for mixtures of the aromatic hydrocarbon toluene with representative members of other hydrocarbon classes of the appropriate boiling range. The estimation of the various hydrocarbon components in the thinner is facilitated by graphs. NRL P-2344.

Examination of toxic agents for fungicidal coating materials. U. S. Naval Research Laboratory.

Part II, by Wilson M. Whaley, W. L. Clark and J. M. Leonard. Aug 1945. 34p photos, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109276

A number of varnish and lacquer films representing sixteen different toxic agents, were examined for fungus resistance after the coatings had been subjected to a simulated service-aging for four months. The results sustain the indications of a previous report, namely; that the fungicides commonly employed at present are quite inadequate, even in comparatively high concentrations. NRL P-2611.

Part III, by Wilson M. Whaley, W. L. Clark, and J. M. Leonard. Aug 1945. 31p photos, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109278

Fifteen chemical compounds have been examined as components of fungicidal lacquers and varnishes. One substance, o-hydroxy-biphenyl, seemed worthy of further investigation, which is now in progress. The need for intensive study of fungicides is still great, as is the need for comprehensive reports from the South Pacific. NRL P-2626.

Heat reflecting coatings for plywood airplanes and gliders, by Robert L. Benemelis and John M. Leonard. U. S. Naval Research Laboratory. Jan 1944. 33p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109330

Three infra-red reflecting enamels of the following colors have been developed, black, deep sea blue, and olive drab. On dummy wing sections in the sunlight each of these coatings showed significantly lower temperature rises than a commerical finish of the same visual color. NRL P-2195.

Investigation of cuprous oxide anti-fouling paint. I: Chemical composition of pigment, by J. P. Ballentine, Leanore Jasewicz, Allen L. Alexander, W. H. Stewart. U. S. Naval Research Laboratory. Aug 1945. 71p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 109314

This report describes an investigation designed primarily to establish the relationship, if any, existing between the cupric oxide content of cuprous oxide pigment and efficiency in preventing the attachment of fouling. An attempt has been made to correlate analysis of cuprous oxide pigment by means of the X-ray diffraction methods with chemical methods. Some evidence is presented to indicate that the primary cause of poor failure of pigment containing high percentages of cupric oxide is not relative to the exact quantity present but rather to the manner in which it is distributed throughout the batch. NRL P-2591.

Merkblatt nr. 7 (Notebook no. 7). Höhn, Dr. & Cie., Chemische Fabrik G.m.b.H., Neuss, Ger. n.d. 36f tables (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Enlargement Print $5.00. PB 109193

English abstract included. Abstract available as PB 109193s. 1p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Drying oils - Preparation - Germany 2. Lacquers - Raw materials - Germany 3. Varnishes - Drying agents - Germany 4. Paints - Binding agents - Germany 5. Micro BIOS FD 1102/45, Frames 1-33.

Method for the evaluation of the abrasion resistance of aeroplane propeller finishes, by J. B. Ballentine. U. S. Naval Research Laboratory. Nov 1942. 22p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109217

1. Propeller blades - Finishes - Testing equipment 2. Propeller blades - Finishes - Abrasion resistance 3. NRL P-1961.

Primer, filler and siccative workshop specification sheets. Glasurit Werke, Hiltrup, Ger. Sep 1947. 8f (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Enlargement Print $2.50. PB 109194

English abstract included. Abstract available as PB 109194s. 1p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Primers - Preparation - Germany 2. Fillers - Preparation - Germany 3. Micro BIOS FD 4405/47, Frames 1-6.

Progress in the study of anti-fouling compositions for the protection of flying boat hull bottoms, by Peter King. U. S. Naval Research Laboratory. Second report, Aug 1942-Oct 1943. Apr 1944.

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95p photos, drawings, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 109252

Tentative specification included as Appendix C. 1. Paints, Anti-fouling - Tests 2. Paints, Anti-fouling - Specifications 3. Flying boats - Hulls - Paints 4. NRL P-2269.

Progress on standard paints and finishes for radio and underwater sound gear, by Roger D. Freriks. U. S. Naval Research Laboratory. May 1944. 13p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109435

This is a report on the relative quality of various proprietary wrinkle finishes. A comprehensive study has been made of the relative properties of these materials with reference to their resistance to various conditions such as salt spray, alkali, cold water, etc. From examination of the data so obtained, a number of materials are considered satisfactory for use on radar and radio equipment. Appropriate recommendations are made based on this data. NRL P-2287.

Ship bottom paint systems. **Part III:** Study of tall oil and tall oil esters as possible rosin substitutes in anti-fouling paints, by S. B. Crecelius, W. H. Stewart, R. L. Benemelis, and J. E. Huskey. U. S. Naval Research Laboratory. Aug 1946. 110p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photostat $13.75. PB 109345

This report describes a study of a number of formulations in which tall oil and two of its esters have replaced rosin in varying amounts. In addition, formulations were prepared in which hydrogenated methyl abietate and abietic acid were used as rosin diluents. For part 5 see PB 106677. NRL P-2946.

Spectrophotometric determination of percent conjugation of drying oils, by James B. Ballentine, S. B. Crecelius, Dorothy L. Moesta. U. S. Naval Research Laboratory. Sep 1944. 17p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109436

This report deals with a relatively new method of determination of the percent conjugation in drying oils. The results of this method are comparably reported with the results of the Ellis-Jones (modified) Diene Method which was previously used in these studies. Conclusions and recommendations are made regarding the future use of this method in specifications for drying oils to be used in protective coatings. NRL P-2288.

Study of non-toxic compositions for the prevention of fouling, by R. L. Benemelis. U. S. Naval Research Laboratory. Jan 1945. 41p photos, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $6.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.25. PB 109469

This report describes the preparation of a number of compositions which were exposed for a period of 30 days. Complete data are listed depicting the service life of these panels during their exposure period and a final summary is given as to their performance. NRL P-2444.

Study of organic protective finishes for plywood airplanes and gliders: First report of progress, prepared by John Leonard. U. S. Naval Research Laboratory. Feb 1943. 31p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109447

1. Coatings, Protective - Tests 2. Paints, Aircraft - Tests 3. Plywood - Coatings, Protective - Tests 4. NRL P-2030.

Study of sag resistances of hot plastic anti-fouling paint, by S. B. Crecelius and Dorothy Moesta. U. S. Naval Research Laboratory. Jul 1945. 22p fold graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109338

A large number of high melting waxes were investigated along with some resinous materials. This report describes in detail the methods used and the results obtained in the entire study. NRL P-2583.

Temporary camouflage paints for use on naval aircraft, by Peter King. U. S. Naval Research Laboratory. Mar 1943. 20p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109220

1. Paints, Camouflage 2. Paints, Aircraft 3. NRL P-2006.

Tests of Dupont aluminum paint P-100 P8497 in the fireroom of the USS Eugene A. Greene (DD711), by J. A. Sanderson. U. S. Naval Research Laboratory. Feb 1946. 10p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109490

1. Paints, Aluminum - Tests 2. NRL H-2755.

Chemical Engineering and Equipment

Methyl methacrylate production equipment. Roehm & Haas A. G., Darmstadt, Ger. 1931-1934. 40f drawings only (Legends in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Enlargement Print $5.00. PB 108970

English abstract included. Abstract available as PB 108970s. 1p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Methacrylic acid, Methyl ester - Production - Germany 2. Micro BIOS/DOCS/1482/2181 3. Micro BIOS FD 1010/47, Frames 1-9.

Miscellaneous Chemicals

Determination of hydrogen sulfide and soluble sulfides by the molybdenum blue method, by Per Olof Bethge. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1952. 5p diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109122

Reprinted from Svensk Kemisk Tidskrift 64 (1952) p. 177-181.
1. Hydrogen sulfide - Determination - Sweden 2. Sulfides - Determination - Sweden 3. Molybdenum blue method (Sulfide determination) - Sweden 4. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 105.

Experimental upper limit for the magnitude of the Hall effect in single crystals of sodium chloride, by John L. Levy. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Dec 1952. 114p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photostat $15.00. PB 109369

After a review of the experimental techniques for determining mobilities in solids, the various methods used for the observation of the Hall effect are analysed critically. The design and construction of equipment using this method are described. Sample holders which keep the sample at the required temperature in the narrow gap of the magnet are also described. Contract no. Nonr-154 (00) Project no. 017416. Project M912.

Hydrides and borohydrides of light weight elements and related compounds. Chicago. University, Chicago, Ill. Final report for the period Jul 1, 1949-Jul 31, 1950 under Contract N6ori-20, T. O. X, by H. I. Schlesinger and Thomas Wartik in collaboration with R. E. Moore, Riley Schaeffer, M. Steindler, and G. Urry. Jul 1950. 43p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109214

Includes Progress reports 35-38 for the period covered. For 1947-48 see PB 97123s.
1. Borohydrides, Metallic 2. Hydrides, Metallic 3. Borazole - Preparation 4. Calcium hydride - Production 5. Lithium borohydrides - Thermal properties 6. Sodium aluminum hydride - Preparation.

Procedure for the estimation of meta- and para-cresols in their binary mixture and in ternary mixture with guaiacol, by H. L. Dinsmore. U. S. Naval Research Laboratory. Mar 1944. 18p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109262

A method is presented for the accurate analysis of meta-cresol-para-cresol mixtures by freezing-point data. While the basic features of the method are admittedly well-known, the technique presented is new and is considered an improvement in speed and simplicity over that of the original workers, with also a possible improvement in precision. The use of freezing-point data for the analysis of meta- and para-cresol mixtures containing guaiacol is shown to be valid, and the means by which the entire analysis is obtained from freezing point data plus the guaiacol content, separately determined by well-known means, is presented. NRL P-2270.

Properties of certain hydrogenation catalysts. Texas University. Dept. of Chemistry. Technical report to the Office of Naval Research under Contract N6-onr-26610 for the period Sep 1, 1948 to Aug 31, 1949, by George W. Watt. Sep 1949. 72p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 108742

Project NR-057154.
1. Catalysts, Hydrogenation 2. Ammonia, Liquid - Chemical reactions 3. Catalysts, Cobalt 4. Catalysts, Iron 5. Catalysts, Nickel 6. Catalysts, Ruthenium.

On the disorder in crystalline 2,2-dinitropropane at room temperature, by S. C. Abrahams. Low-temperature transition in magnetite, by S. C. Abrahams and B. A. Calhoun. Low temperature adapter for the Norelco high-angle spectrometer, by B. A. Calhoun and S. C. Abrahams. Shielding device for X-ray diffraction cameras, by S. C. Abrahams and W. R. Blackmore. Massachusetts Institute of Technology. Laboratory for Insulation Research. Feb 1953. 19p drawings, diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109096

2,2-Dinitropropane forms face-centered, cubic crystals at room temperature, with $a_o = 8.78 + 0.05$A, and 4 molecules per unit cell. Molecular disorder is necessarily present in the cell, and several models are examined. Excellent agreement is obtained with a model in which the molecule possesses complete orientational disorder. Although the distinction between "rotational" disorder in time and in space is not possible, the following mechanism is suggested: while the disorder is complete at long range, there is a high degree of order at short range. O.N.R. Contracts N5ori-07801, N5ori-07858. MIT LIR TR 60, MIT LIR TR 61, MIT LIR TR 62, MIT LIR TR 63.

Oxides and hydroxides of praseodymium, by Ralph Gher, G. L. Bushey, and L. F. Audrieth. Illinois. University, Urbana, Ill. Jun 1950. 42p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 108736

The possible use of hydrazine dihydrochloride as a standard reducing agent for the determination of active oxygen in higher valent praseodymium oxide has been investigated. Results for the percentage active oxygen obtained by this method are low in comparison with other analytical procedures, but are consistent within themselves. It has been shown that black praseodymium oxide, when heated in a 5% solution of hydrazine, is reduced to the yellow-green hydroxide. The material formed by this method, and that formed by precipitation from praseodymium chloride solution with ammonium hydroxide, are identical in color and in x-ray diffraction patterns. The hydroxide prepared by the hydrazine reduction method possesses better physical characteristics in that it is granular instead of gelatinous and therefore easier to filter, wash and dry. Contract N6ori-71, Chemistry task no. VII.

Synthesis of certain aliphatic nitro compounds, by H. B. Hass. U. S. National Defense Research Committee. Oct 1941. 37p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109158

This report describes the preparation of fourteen aliphatic mono- and poly-nitro compounds. It is to be noted that some of the hydroxyl compounds described in this report may find considerable use as glycerol substitutes upon further nitration. Some pages will not reproduce well. Progress report to Sep 15, 1941 under Contract B-2, NDCrc 35 with Purdue University. Includes U. S. Bureau of Mines Technical Reports BM-7 and BM-12 on Stability of explosive prepared at Purdue University. NDRC B-92. OSRD 154.

Ultraviolet absorption spectra of nitramines, nitrosohydroxylamines and their salts, by Marvin Carmack and J. J. Leavitt. U. S. National Defense Research Committee. May 1944. 16p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109157

This report deals with studies of ultraviolet absorption spectra as a means of distinguishing between the nitramine group - NH - NO_2 and the isomeric nitrosohydroxylamine structure - N(OH)-NO. Progress report under Contract OEMsr-646 with Univ. of Pennsylvania. NDRC 8.2. OSRD 3565.

Untersuchung von pentaeryghrit (Tests of pentaerythritol). Dynamit A. G., Troisdorf, Ger. Nov 1939. 5f drawings (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.50. PB 109168

May be document referred to in BIOS FR 1217, p. 2.

1. Pentaerythrit (Trade name) 2. Pentaerythritol - Derivatives - Germany 3. Micro BIOS/DOCS/2607/2373/1-2 4. Micro BIOS FD 1841/47, Frames 1-5.

Vapor lock and freezing point characteristics of methyl alcohol-ethyl alcohol-water deicing fluids, by G. S. Gordon. U. S. Naval Research Laboratory. Jul 1944. 33p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.00. PB 109290

1. Compounds, De-icing 2. Vapor lock 3. Alcohol mixtures - Freezing points 4. NRL P-2342.

ELECTRICAL MACHINERY

Communication Equipment

Acceptability tests of the Brelco production model CAQZ-X49771 radio call selector and comparison with the W. E. type 105A selector, by H. V. Jensen. U. S. Naval Research Laboratory. Dec 1945. 19p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109309

1. CAQZ-X49771 (Radio selector) 2. 105A (Radio selector) 3. Radio - Signals - Selectors 4. NRL R-2705.

Development and absolute calibration of condenser microphones with solid dielectrics for ultrasonics, by W. Kuhl. n.d. 36p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 108562

Work carried out at the Physikalisches Institut der Universität Göttingen.
1. Microphones, Condenser - Germany 2. Microphones - Calibration - Germany 3. Radiation, Ultrasonic 4. Dielectrics - Use in microphones 5. Göttingen. Universität. Physkalisches Institut 6. DSIR SR 5 (Series B).

Radio frequency high voltage power supplies, by G.W.C. Mathers, with revisions by S.J. Buchsbaum. National Research Council of Canada. Radio and Electrical Engineering Division Laboratories. Revised. Nov 1952. 63p photos, drawings, diagrs, graphs, tables Available from National Research Council of Canada, Ottawa, Canada. $.75. PB 93925r

The theoretical analysis of the double-tuned, overcoupled air transformer, used in radio frequency high voltage supplies shows that the equivalent circuit will oscillate at two frequencies — one above, and one below the self-resonant frequency of the second circuit These frequencies can be varied, within limits,

around the self-resonant frequency of the secondary circuit, by changing the tuning of the primary circuit. The limits in the variation of the operating frequency are imposed by the effective Q of the primary circuit, which has a definite minimum value for good operation of the oscillator. The oscillator can be forced to operate at either the lower or higher resonant frequency by reversing the coupling between the scondary coil and the tickler coil. Starting from the required d-c output power, a design procedure is outlined which will give all the circuit constants and operating conditions to obtain this output. Original report date March 1948. See PB 93925 (NRCC 1725 and NRCC ERA-147). NRCC 2866. NRCC ERA 147, revised.

Reaction of small enclosures on the human voice: Transmission of speech through gas masks, by C. T. Morrow. Harvard University. Electro-Acoustic Laboratory. Oct 1945. 138p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.50, Photostat $17.50. PB 109017

1. Speech - Transmission 2. Transmitters, Speech 3. E17 R8 (Speech transmitter) 4. Respirators - Voice transmission 5. NDRC Div 17.3 6. OSRD 6309. Contract OEMsr-658.

Report of test on head telephone receivers (Nathaniel Baldwin Laboratories), by Maury L. Hull. U. S. Naval Research Laboratory. Jan 1943. 14p photos, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109231

1. Telephones - Receivers - Tests 2. Baldwin, Nathaniel, Laboratories 3. NRL R-1983 4. NAVSHIPS Prob M52.

Report on model XAZ radio transmitting equipment by F. T. Powles and W. E. Withrow. U. S. Naval Research Laboratory. Feb 1944. 22p photos, diagrs (1 fold), graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109255

1. Radio transmitters - Tests 2. XAZ (Radio transmitter) 3. NRL R-2202 4. NAVSHIPS Prob S121 R-C.

Spare parts catalog for Navy model TBW-2/3/4/5 portable radio transmitting equipment. Westinghouse Electric and Manufacturing Co., Baltimore, Md. U. S. Bureau of Ships. Feb 1945. 62p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 109084

1. TBW-2 (Radio transmitting equipment) 2. TBW-3 (Radio transmitting equipment) 3. TBW-4 (Radio transmitting equipment) 4. TBW-5 (Radio transmitting equipment 5. Radio transmitters - Parts 6. Westinghouse Electric and Manufacturing Co., Baltimore, Md. 7. NAVSHIPS 900,327.

Statistical criteria for the detection of pulsed carriers in noise, by David Middleton. U. S. Air Force. Electronics Research Directorate, Cambridge Research Center, Cambridge, Mass. Nov 1952. 97p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 108574

A theory for the detection of pulsed carriers in narrow-band random noise is described. Siegert's concept of the betting curve is introduced, whereby, for a finite integration time, the minimum detectable signal is uniquely defined. Three types of observer are next considered: the Neyman-Pearson, the Ideal, and the Sequential observer, whose properties are determined by the manner in which the test is carried out. For each observer it is verified that the best second detector is a log I_0-rectifier, which in practice is closely approximated by the usual half-wave linear envelope-tracer. Specific betting curves are determined for the weak-signal cases, and some approximate curves for strong signals are also included. A detailed analysis of performance and of some of the factors affecting it are given, illustrated by a large number of curves. The study concludes with a brief account of a general statistical theory of the observation process and its relation to the various observers considered here. AAF CRL E5091.

Surface-wave transmission-line units. Final report under Contract no. DA36-039-sc-5462. Sperry Gyroscope Co., Great Neck, N. Y. Dec 1952. 65p drawing, diagrs, graphs (1 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 109280

A brief description is given of the three surface-wave transmission-line units designed to operate over the frequency bands 300-900 mc, 1000-9000 mc. The design of low-VSWR launching horns is analyzed. The general problem of lossy microwave networks is discussed. Recommendations are made concerning the optimum design of the launching horns. Signal Corps project nos. 824-I and 824-J. Dept. of the Army project nos. 3-24-06-046 and 3-24-06-047. Sperry engineering report no. 5224-1315.

Test of loop structure assembly of the model DQ radio direction finder equipment, by John H. Gough and George A. Lyle. U. S. Naval Research Laboratory. Mar 1935. 18p graphs (1 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109274

1. Radio direction finders - Circuits - Tests 2. DQ (Radio direction finder) 3. NRL R-1141.

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Test of radio sets SCR 608-A, SCR 609, and SCR 610, U. S. Army F-M equipment, by M. F. Hodges. U. S. Naval Research Laboratory. Mar 1944. 99p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 109283

1. Radio - Tests 2. SCR 608-A (Radio) 3. SCR 609 (Radio) 4. SCR 610 (Radio) 5. NRL R2254 6. NAVSHIPS Prob S471 T-C.

Test on head telephone receivers, headband, and cord, submitted by Permoflux Corporation, prepared by Maury I. Hull. U. S. Naval Research Laboratory. Apr 1943. 35p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109446

1. Telephones - Headsets - Tests 2. Telephones - Receivers - Tests 3. Telephones - Cords - Tests 4. Permoflux Corporation, Philadelphia, Pa. 5. NRL R-2029 6. NAVSHIPS Prob M-64.

Test on head telephone receivers, type 49016, head bands, type 49028 and diaphragms type 49033, submitted by Dictograph Sales Corporation, New York, N. Y., prepared by Harris F. Hastings. U. S. Naval Research Laboratory. Oct 1952. 10p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.25. PB 109249

1. Telephones - Receivers - Tests 2. Telephones - Headsets - Tests 3. Telephones - Diaphragms - Tests 4. NRL R-1949. 5. NAVSHIPS Prob M10-11.

Test on head telephone receivers, type 49016; head bands, type 49028; diaphragm, type 49033; cord, 49012-C; and plug, type 49034A submitted by Dictograph Sales Corporation, prepared by John A. Connor. U. S. Naval Research Laboratory. Aug 1943. 9p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109325

1. Telephones - Receivers - Tests 2. Telephones - Headsets - Tests 3. Telephones - Diaphragms - Tests 4. Dictograph Sales Corp 5. NRL R-2134 6. NAVSHIPS Prob M10-11.

Electronics

Application of the inherent flexibility factor in the design of a mounting system, by M. W. Maier. U. S. Naval Research Laboratory. Sep 1946. 14p fold graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109431

The flexibility of the cabinet, chassis, and mounting brackets of resiliently mounted equipment affects the natural frequencies of vibration. The "Inherent Flexibility Factor" is discussed and a method is outlined to permit its consideration in mounting design. Curves and examples are presented. NRL V-2969.

Behavior of slow electrons in polar crystals, by E. P. Gross. Massachusetts Institute of Technology. Laboratory for Insulation Research. Dec 1952. 41p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 108707

The effective mass of slow electrons in polar crystals is investigated using the continuum model of Pekar and Fröhlich, Pelzer and Zienau. The Hamiltonian is studied in a Fock representation so that effects of several quanta can be assessed. The calculations show that the effective mass is larger than that predicted by the one quantum solution, but that the effective mass is still smaller for weakly polar crystals. For excess electrons in strongly polar crystals many quantum contributions must be included and the present method is inappropriate. Holes in polar crystals appear to satisfy the conditions for the validity of the theory of Landau and Pekar which predicts a high effective mass. Contracts N5ori-07801 and N5ori-07858. MIT LIR TR 55.

Development and application of automatic assembly techniques for miniaturized electronic equipment. Stanford Research Institute, Stanford, Calif. Interim engineering report no. 1 under Contract no. AF33(038)-18976, covering period 12 Feb to 30 Oct 1951, by Beardsley Graham and Ralph A. Krause. Nov 1951. 137p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.50, Photostat $17.50. PB 109418

In reporting the work accomplished on this program during the first part of Phase I, methods are discussed for defining and classifying the many fabricating processes currently used or suitable for mechanized assembly. The Construction Techniques Classification System, derived for the evaluation of processing techniques and related materials to determine their suitability for automatic assembly, is presented in detail. Charts detailing the processing information for forming functional elements are presented in the Appendices. An attempt has been made to identify each operation of a process to the detail necessary for evaluating the practicality of mechanizing that operation. Appendix A is Processing charts for functional elements. SRI Proj 413, Report no. 1.

Development of broadband bends, twists and corners. Sperry Gyroscope Co., Inc., Great Neck, N. Y. Final report on Contract no. DA-36-039-sc-165. Sep 1951. 101p photos, fold drawings, fold diagrs, fold graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photostat $13.75. PB 108820

These components were designed to meet specified electrical performance without requiring complex or exacting manufacturing techniques. The problem was approached by first developing a particular unit in the RG-51/U waveguide size and then scaling the design to the other sizes. The dimensions of the bends and twists were made sufficiently large to permit the use of the Cerro-metal technique of manufacture instead of a precision method. A new type of corner was developed employing a cylindrical post in place of a miter to compensate for the discontinuity effects encountered in directing the energy around the corner. Sperry report no. 5224-1267. Dept. of the Army project: 3-26-00-602. Signal Corps project: 32-2006-3.

Effect of multipath distortion on the choice of operating frequencies for high-frequency communication circuits, by D. K. Bailey. U. S. National Bureau of Standards. Jun 1951. 19p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109083

NBS project 1405-53-1599.
1. Circuits, High frequency 2. Radio waves - Distortion 3. NBS 1053.

Electronically scanned panoramic receiver (5-10 kilocycles), by G. J. Perlow, J. R. Zimmerman, G. A. Johnson, and G. M. Mathiesen. U. S. Naval Research Laboratory. Jun 1945. 58p photos, diagrs (1 fold), graphs (part fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 109315

This report concerns the development and preliminary tests of an electronically scanned sonar panoramic search receiver having a frequency range from 5 to 100 kilocycles. Within the range covered, the probability is 100 per cent that the receiver will indicate the frequency of any supersonic carrier with a pulse width as short as 3.3 milliseconds and a recurrence rate as low as one cycle per second. NRL R-2549.

Electronics applied to the measurement of physical quantities, by G. E. Bennett, G. R. Richards, and E. C. Voss. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1947. 127p photos, drawings, diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $8.75. PB 109360

The report describes the application of electromechanical and electronic principles to the design of instruments for the measurement of physical quantities such as movement, strain, pressure, acceleration, and vibratory motion, with particular reference to the special requirements of aeronautical engineering. The dynamic characteristics of pick-ups are considered, and sub-divided on an electrical basis into electromagnetic, capacitance and resistance types, a detailed description of each type being given. An account is given of the circuits used for the conversion of the electrical variation produced in each type of pick-up into a corresponding voltage or current, particular mention being made of bridge circuits and resonance circuit methods. The special requirements of amplifiers, and the best basic circuits for satisfying them, are considered and illustrated by detailed reference to a number of particular amplifier design; in particular, direct-coupled and carrier amplifiers are considered. The requirements of recording equipment and the various recording methods are discussed, and a detailed account given of photographic recording and various oscillograph camera, their optical arrangements, components and timing devices. Single and multi-channel recording equipments are considered with a brief survey of existing literature and more detailed reference to new developments of single-channel equipments designed for specific purposes, and four-, six and twelve-channel general purpose equipments using either cathode-ray tubes or recording moving-coil galvanometer. Finally, the application of the techniques and instruments to typical measurements undertaken since 1940 are described. Cover date is 1952. S. O. code no. not given. ARC RM 2627.

Final rengineering report on eight microfarads capacitors, period Jul 1, 1946 to Dec 31, 1947, under Contract no. W33-038-ac-14749, by George H. Stinson. Mallory, P. R. & Co., Inc., Indianapolis, Ind. Jan 1948. 33p drawing, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 108741

ENG 3515-R (ENG 3515-022). Includes Tantalum supply situation, by Reginald S. Dean (p. 28-32).
1. Capacitors, Electrolytic 2. Capacitors, Tantalum 3. Tantalum - Production.

High dielectric constant high temperature ceramic suppression capacitor. Stupakoff Ceramic & Manufacturing Co., Latrobe, Pa. Final progress report 1 Apr 1949 through 31 Mar 1951, under Contract no. W36-039-sc-38251, by Louis G. Kutzer. Mar 1951. 258p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.00, Photostat $32.50. PB 108659

This report is descriptive of an investigation directed toward the improvement of a dielectric material, design and construction and miniaturization of high dielectric constant hermetically sealed high temperature ceramic feed through suppression capacitors. Minor additions of iron oxide, lead titanate or manganese dioxide have been found to improve the high temperature electrical characteristics of a barium titanate dielectric. Tests were performed to determine the effect of forming and/or firing conditions on the characteristics of a dielectric material. Dept. of the Army project no. 3-26-00-602. Signal Corps project no. 32-2006-3.

Measurements with a transient probe of the ion density in the afterglow in an induction-excited toroidal tube, by Winston H. Bostick and Morton A. Levine. Tufts College. Dept. of Physics. Research Laboratory of Physical Electronics. Sep 1952. 27p photo, diagr, graphs Available from

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Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109131

A transient probe method has been developed for measuring ion densities in the afterglow following a pulsed, induction-excited discharge in a toroidal tube, with and without an annular magnetic field. The annular magnetic field has been used to reduce ion and electron ambipolar diffusion loss to the walls at low pressures. Scientific report no. 1 under Contract no. AF19(122)-89.

Notes on lectures by Julian Schwinger on discontinuities in waveguides, prepared by David S. Saxon. Feb 1945. 144p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.75, Photostat $18.75. PB 108834

The purpose of these notes is to discuss by example the general methods which are available at present for solving problems concerning obstacles and discontinuties in waveguides. These methods fall rather naturally into two categories, which are labelled "Engineering Methods" and "Theoretical Methods" respectively. The former consists of a systematic analytical procedure for reducing complicated problems to the fundamental elements of which they are composed by the application of generalized transmission line theory, symmetry considerations, and the principle of Babinet. All of these are discussed in detail.

On basic existence theorems. III: Theoretical considerations on rational fraction expansions for network functions, by Manuel V. Cerillo and Ernest A. Guillemin. Massachusetts Institute of Technology. Research Laboratory of Electronics. Jun 1952. 48p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 108831

The present report is divided into two parts. Part I deals with the establishment of a set of integrals which characterize transfer functions. These integrals express the necessary and sufficient condition for the existence of transfer functions. Part II deals with some basic aspects of the rational expansion of transfer functions. The integral representations above serve as the fundamental mathematical tools for the construction of such rational expansions. Particularized aspects of the expansion problem are dealt with here, but they are general enough to show the main ideas and trends which are followed in a more advanced investigation on the subject. MIT RLE TR 233.

Propagation of electromagnetic waves along a conical helix with variable pitch, by Gösta Hellgren. Chalmers University of Technology, Gothenburg, Sweden. May 1952. 17p diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109117

Avd. Elektroteknik 31. Reports from the Research Laboratory of Electronics no. 25.
1. Waves, Electromagnetic - Propagation - Sweden
2. Helix, Conical - Reflection coefficient - Sweden
3. Helix, Conical - Impedance - Theory - Sweden
4. Chalmers University of Technology, Gothenburg, Sweden. Transactions no. 130.

Radar investigation of the delta aquarid meteor shower of 1950, by Bertil-Anders Lindblad. Chalmers University of Technology, Gothenburg, Sweden. May 1952. 40p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109116

Avd. Elektroteknik 30.
1. Meteors – Radio detection - Sweden 2. Poynting - Robertson effect (Meteor dispersion) 3. Aquarids (Meteors) - Sweden 4. Meteorological research - Sweden 5. Chalmers University of Technology, Gothenburg, Sweden. Transactions no. 129.

Rhombic antennas for fringe area television reception, by William R. Ford. Kansas. Engineering Experiment Station, Manhattan, Kansas. Aug 1952. 9p diagr, table Available from Engineering Experiment Station, Kansas State College, Manhattan, Kans. Kansas State College bulletin vol. XXXVI, no. 4. PB 108615

1. Antennas, Rhombic 2. Antennas, Television
3. K EES C4.

Simple graphical analysis of waveguide junctions, by J. E. Storer, L. S. Sheingold, S. Stein. Harvard University. Cruft Laboratory. Aug 1952. 55p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 108607

A graphical analysis based on the original work of Deschamps is presented for obtaining the scattering matrix of waveguide junctions from standing-wave measurements. Also, a method is outlined whereby the reflection coefficient of a load terminating the junction can be obtained graphically from the measurement of the reflection coefficient as seen through the junction. Contract N5ori-76, T. O. no. I, NR-078-011. HU CL TR 160.

Systems tests of the SL radar (Contractor: Western Electric Co.), by J. P. Hagen, R. B. Meyer and T. M. Davis. U. S. Naval Research Laboratory. Jan 1944. 139p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.50, Photostat $17.50. PB 109326

1. Radar - Tests 2. SL (Radar) 3. NRL R-2160
4. NAVSHIPS Prob S85T-C.

Tables of dielectric materials, vol. IV. Massachusetts Institute of Technology. Laboratory for In-

sulation Research. Jan 1953. 154p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $6.00, Photostat $20.00. PB 109095

For vol. 1 see PB 4658; for vol. 2 see PB 4661; for vol. 3 see PB 98537. ONR contracts N5 ori-07801 and N5 ori-07858.
1. Dielectric research 2. Dielectrics - Constants 3. Dielectrics - Losses 4. Ceramics - Dielectric properties 5. Plastics - Dielectric properties 6. Dielectrics, Fluid - Constants.

X band crystal video performance with bias, by W.E. Meyerhof, B. Sorin, R. H. Vought. Pennsylvania. University, Philadelphia, Pa. Jul 1945. 14p diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108749

Contract OEMsr-388.
1. Crystals, Germanium 2. Crystals, Silicon 3. Radar - Bands X 4. Detectors, Crystal 5. X-band crystal video performance with bias 6. NDRC Div 14-456.

Generators, Motors, Transmission

Design and development of the NAJ beacon Mark I and Mark 2, by Robert P. Hill. U. S. David W. Taylor Model Basin, Washington, D. C. Nov 1948. 24p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 108856

The NAJ Beacon is an electronic underwater-sound transmitter designed to be used as a homing device for small craft in air-sea rescue work. Two models of this device were designed; the first for use as life-raft equipment and the second as personal-issue life-jacket equipment. The first model is identified as the NAJ Beacon Mark 1 and the second as NAJ Beacon Mark 2. Mark 1 was found to have a maximum range of 15,650 yd and a life expectancy of 24 hr when operated 2 min out of each 15-min interval. Mark 2 was found to have a maximum range of 12,600 yd and life expectancy of 24 hr when operated under the same conditions as Mark 1. DWTMB 659.

Double phantastron precision trigger generator, by R. S. Richards. National Research Council of Canada. Radio and Electrical Engineering Division. Jan 1953. 16p diagrs, graph Available from National Research Council of Canada, Ottawa, Canada. $.25. PB 109138

1. Generators, Trigger - Design - Canada 2. Phantastrons - Canada 3. NRCC 2854 4. NRCC ERA 239.

Effect of component tolerances on voltage stabilizer design, by W. G. Hoyle. National Research Council of Canada. Radio and Electrical Engineering Division. Dec 1952. 24p diagrs, graph Available from National Research Council of Canada, Ottawa, Canada. $.50. PB 109085

1. Circuits, Voltage multiplier - Design - Canada 2. Resistors - Tolerance - Canada 3. Voltage - Stabilization - Canada 4. NRCC ERA-240 5. NRCC 2889.

Generation of standard frequencies using a selective spectrum generator, by Richard Guenther and Alwin Hahnel. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Jul 1952. 19p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108658

This paper deals with a relatively little known method to produce harmonics within a restricted frequency band which may easily be shifted over a relatively wide range to any desired frequency. Physically, such a spectrum generator may be realized by proper pulsing of a free running oscillator. The discrete frequencies of the spectrum are then harmonically related to the pulse repetition frequency, and the center of the spectrum is determined by the free running frequency of the oscillator. Several practical applications of the selective spectrum generator are discussed, including frequency or phase modulation of the harmonics within the spectrum by modulating the pulse repetition frequency. Dept. of the Army project no. 3-99-12-021. Signal Corps project no. 132A. SCEL TM M-1462.

Investigation of RMA and NRL transformer test chambers for proposed specification JAN-T-27, by G. L. Anderson and H. S. Robertson. U. S. Naval Research Laboratory. Jun 1946. 21p photos, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 109422

1. Transformers - Testing equipment 2. JAN-T-27 3. NRL R2869.

Investigation of the REL model 575-BC loran transmitter, by M. V. Hoover. U. S. Naval Research Laboratory. May 1944. 96p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 109307

Contractor: Radio Engineering Laboratories Inc., Long Island City, N. Y.
1. 575-BC (Transmitter) 2. Loran - Transmitters - Tests 3. Radio Engineering Laboratories, Inc., Long Island, City, New York. 4. NRL R-2285 5. NAVSHIPS Prob S402 T-C.

Jamming transmitter of MAS type for the range 60 to 100 MC, by O. N. Wright. U. S. Naval Research Laboratory. Aug 1945. 29p photos, drawing, diagrs, graphs Available from Library of Congress, Pub-

lication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109313

This unit operates on a higher frequency band than the first MAS Jammers, but uses the same principles of operation. Use may be made of the MAS Rectifier and Power Unit CLU-20ACZ for power supply since this equipment is wired to accomodate all MAS control circuits. Modulated power output varies from 240 to 200 watts in the carrier frequency range of 56 to 104 megacycles. The transmitter may be modulated at any fixed frequency of 1, 1.5, 8, or 12 kc, with provision for use of an external modulation source. The state of development of this unit is such, that with slight modifications, it could readily be produced by a manufacturer. NRL R2595.

Methods for predicting steady-state performance in unbalanced regulated three-phase generators, by B. J. Wilson. U. S. Naval Research Laboratory. Feb 1953. 30p diagrs, graphs, tables Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 111161

Based on simultaneous solutions of algebraic equations, a solution is obtained for resultant values of excitation voltage for a regulated ac generator operating under unbalanced conditions. These equations result from a detailed consideration of the reaction to unbalance of the regulator system components. In general, solutions of the equations can be obtained graphically. An accuracy of better than ten percent is estimated. NRL R4102.

Model EF-4 gas engine generator equipment, by A. L. Howard. U. S. Naval Research Laboratory. Nov 1944. 73p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 109526

1. EF-4 (Generator) 2. Generators, Engine driven - Tests 3. NRL R-2407.

Simulation methods applied to single-tube harmonic generator design, by H. H. Grimm. U. S. Naval Research Laboratory. Jul 1948. 15p diagr, table Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 111159

Method described for improving gain obtained in frequency multipliers through study of process of harmonic generation in single-tube circuits. Circuits operating in the audio range were used to study distorted waveforms having the desired shapes. Conditions to be imposed are derived and experimental data given. NRL R3309.

Substitute for selenium in rectifiers. Final report, 1 May 1951 to 30 Nov 1951 under Contract no. DA-36-039-sc-5563, by C. A. Escoffery. International Rectifier Corporation, Los Angeles, Calif. Dec 1951. 45p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 108906

The results of studies to develop a tellurium rectifier are described. The rectifying properties of tellurium against various metals were investigated, and best results were obtained with magnesium, preferably anodized. These investigations are described in some detail. Conclusions and recommendations, based on the results obtained in these investigations are included. Dept. of the Army project 3-26-00-602. Signal Corps project 32-2006-3.

Test of model CXKB-1 (FRG) frequency shift converter equipment, by C. E. Young and B. I. Green. U. S. Naval Research Laboratory. May 1946. 28p photos, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 109275

The Model FRG frequency shift converter is designed to operate from the audio output of a standard radio receiver, and provides output for teletype communications. Tests of the preproduction FRG converter (Model CXKB-1) were conducted to determine its performance characteristics and suitability, as well as its limitations. Consideration was also given to necessary improvements for future frequency shift equipment of this general type. NRL P-2829.

Test of six wire wound style A grade 1 class II fixed resistors submitted by Industrial Instruments, prepared by Rudolf Oras. U. S. Naval Research Laboratory. Aug 1953. 9p photo, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109324

1. Resistors, Fixed - Tests 2. Industrial Instruments, Inc., Cedar Grove, N. J. 3. NRL R-2136 4. NAVSHIPS Prob M-104.

Miscellaneous

Comparison of lead acid and alkaline batteries for use in M. T. vehicles, by J.W.T. Durrell and S. Pomroy. Gt. Brit. Royal Aircraft Establishment, Farnborough, England. Feb 1951. 15p graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109304

British crown copyright.
1. Batteries - Tests - Gt. Brit. 2. Batteries, Alkaline - Gt. Brit. 3. Batteries, Lead acid - Gt. Brit. 4. RAE TN Chem 1144.

Description and use of electron micrometer tube type C796A, by John B. Peterson. U. S. Naval Research Laboratory. Oct 1946. 16p drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington

25, D. C. Microfilm $1.75, Photostat $2.50.
PB 109433

The electron micrometer tube provides the engineer with a precise mechanism for the accurate conversion of small mechanical deflections into electrical currents. The Type C796A tube has a single plate which is movable between two indirectly heated cathodes. The plate is mounted on a stem which extends through the center of a flexible diaphragm to the outside of the metal envelope. Mechanical deflection of the outer end of the stem in the proper direction causes the plate to move closer to one cathode and further away from the other cathode. The two plate-cathode circuits are connected as two arms of a bridge circuit and the galvanometer current in this bridge circuit is used with or without amplification to operate an indicator, recorder or controller. NRL O-2977.

Determination of peak operating voltage for low tension aircraft cable, by Arthur A. Daush and William A. Ritchie. U. S. Naval Research Laboratory. Jun 1946. 15p diagr, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50.
PB 109464

1. Cables, Aircraft - Thermal properties 2. Cables, Aircraft - Insulation - Tests 3. Cables, Aircraft - Insulation - Effect of humidity 4. NRL E-2830.

Excitation of molecular spectra, II: High-voltage arc in an argon-nitrogen mixture, by R. W. Nicholls. University of Western Ontario. Dept. of Physics. Jan 1953. 11p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50.
PB 108921

Scientific report no. 6 on Contract no. AF19(122)-470. For report no. 3 see PB 108581; for report no. 4 see PB 108920.
1. Spectroscopy, Molecular - Canada 2. Argon - Spectrographic analysis - Canada 3. Lamps, Incandescent - Canada 4. Molecular theory - Canada.

Progress report for October-December 1952. National Research Council of Canada. Radio and Electrical Engineering Division. Jan 1953. 30p photos, drawing, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available free from National Research Council of Canada, Ottawa, Canada.
PB 109086

1. Dielectric research - Canada 2. Navigational aids - Canada 3. Tubes, Electron - Research - Canada 4. Noise, Solar - Measurement - Canada 5. Electromedical research - Canada 6. NRCC ERA-243.

Report of test on contact makers, types "L" and "N," submitted by Detroit Lubricator Co., Detroit, Mich., tested and prepared by A. R. Donaldson and F. W. Jank. U. S. Naval Research Laboratory. Dec 1942. 39p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00.
PB 109228

1. Contacts, Electric - Tests 2. Detroit Lubricator Co., Detroit, Mich. 3. NRL B-1967.

Report on errors introduced by arbitrary lengths of solid dielectric cables in slotted line impedance measurements, by K. W. Bowig. U. S. Naval Research Laboratory. May 1946. 42p drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.25.
PB 109468

In measuring the input impedance of several antenna loads, it was necessary at times to introduce rather long lengths of solid dielectric cable between the antenna and the slotted measuring line. This report points out one of the causes of serious disagreement. When relatively long lengths of cable are inserted between the load and the slotted line, the measured values can become random if a significant discontinuity exists between the slotted line and the cable. NRL R-2828.

Status report on the effect of over-voltage, voltage regulation, altitude, and the ratio of electrolyte to active material on the characteristics of aircraft storage batteries, by M. H. Boyer and R. A. Friend. U. S. Naval Research Laboratory. Oct 1946. 26p graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75.
PB 109434

1. Batteries, Storage - Charging 2. Batteries, Storage - Voltage regulation 3. Batteries, Storage - Effect of altitude 4. NRL P-2981.

Study of the MSA Hydrogen Eliminator V to determine its operating characteristics, by Franklin S. Thomas. U. S. Naval Research Laboratory. Oct 1942. 38p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00.
PB 109247

Eighteen plates are presented in this report showing the operational characteristics of this equipment and the results to be expected in service. Suggestions are presented for a method of increasing the capacity of the eliminator for emergency use and for a mode of operation to yield efficient use of the equipment. NRL P-1946.

Symposium on electricity. U. S. Naval Research Laboratory. May 1949. 58p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington

25, D. C. Microfilm $2.75, Photostat $7.50.
PB 109216

Contents: Short circuit characteristics of direct current machines, by A. T. McClinton. Study of the life temperature characteristics of insulation, by E. L. Brancato. - Minimum leakage and clearance distances, by W. W. Rosenberry. - Effective resistance and inductance of three conductor shipboard power cables, by Samuel B. Summers. - Theoretical thermal rating of aircraft cables, by Milton Schach. - Development of a remote tank level indicating system, by J. M. Marzolf, Jr. - NRL jet thrust computer, summary of a talk delivered by E. S. Van Valkenburg at the Naval Research Laboratory on 19 May 1949.
1. Electrical equipment - Short circuits 2. Insulation - Temperature characteristics 3. Indicators, Liquid level 4. Cables, Electric - Losses 5. Cables, Aircraft - Thermal properties.

Thermal noise in vacuum tube amplifiers, by W. G. Long, Jr. and F. X. Urrico. U. S. Naval Research Laboratory. Jan 1953. 16p diagrs, graphs Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Mimeo: $.50. PB 111145

A review and compilation of available information related to electron tube noise has been made and this information has been modified and supplemented where necessary. A study of the generation, representation, and prediction of tube noise indicates that a triode is superior to a pentode from a low-noise standpoint. An analysis of various types of circuits indicates that the achievement of voltage gain in the first stage is a primary consideration, hence a grounded-grid amplifier, a conventional amplifier, or a cascode amplifier may be utilized in the first stage of a low-noise receiver multicoupler. NRL R4094.

Treatment of the load in electric power-system stability studies, by Sven Lavemark. Chalmers University of Technology, Gothenburg, Sweden. Jan 1952. 56p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 109115

Avd. Elektroteknik 29.
1. Electric power - Stabilization - Sweden 2. Electric power - Load - Sweden 3. Chalmers University of Technology, Gothenburg, Sweden. Transactions no. 128.

FOOD AND KINDRED PRODUCTS

Manual of nutrition. Ed. 3. Gt. Brit. Ministry of Food. Jan 1953. 64p diagr, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 109357

S. O. code no. 68-4.
1. Nutrition - Gt. Brit. 2. Vitamins - Sources - Gt. Brit. 3. Food - Analysis - Gt. Brit.

FUELS AND LUBRICANTS

Adsorption of aromatic hydrocarbons from hydrocarbon solutions, by P. N. Craig and D. C. Smith. U. S. Naval Research Laboratory. Jul 1945. 40p drawing, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00.
PB 109312

The effectiveness of six different adsorbents (silica gel, activated carbon, magnesia, Fuller's Earth, Magnesol and alumina) was measured for the selective adsorption of several aromatic hydrocarbons. The effects of varying the aromatic hydrocarbons, solvents, concentrations, rates of flow and temperature were determined for the most suitable adsorbent, silica gel. The tendency for fractionation of aromatic hydrocarbon mixtures in paraffinic solution upon percolation has been investigated. The effect of one olefin (pentene-2) and of a highly polar compound (xylidine) upon the aromatic hydrocarbon adsorption from paraffinic solution has been shown for silica gel and activated carbon. The usefulness of percolation adsorption in gasoline analysis has been discussed in terms of the results of this investigation. NRL P-2596.

Development of the hydrolube non-inflammable hydraulic fluids, by J. G. O'Rear, R. O. Militz, D. R. Spessard and W. A. Zisman. U. S. Naval Research Laboratory. Apr 1947. 92p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 109091

1. Hydraulic fluids, Non inflammable 2. Hydrolube U (Trade name) 3. NRL P3020.

Effect of organic sulfur compounds upon the induction period of aviation gasoline, by Alan K. Roebuck and William D. Dunn. U. S. Naval Research Laboratory. Nov 1945. 18p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109225

Small quantities of sulfur or organic sulfur compounds frequently are present in aviation gasoline. The effect of certain typical organic sulfur compounds on the ASTM induction period of aviation gasoline has been measured. It was found that the organic sulfur compounds examined had no adverse effect upon the induction period of leaded aviation gasoline. NRL P2625.

Flammability limits for mixtures of hydrocarbon fuels, air, and halogen compounds, by H. E. Moran, Jr. and A. W. Bertschy. U. S. Naval Research Laboratory. Feb 1953. 14p photo, diagr, graphs, tables Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 111154

The effect of the addition of various fluoro, chloro, and bromo compounds on the flammability limits of mixtures of air and hydrocarbon fuel was determined in order to indicate their effectiveness as fire extinguishants. The additives were, in order of decreasing effectiveness, methyl bromide, bromochloromethane, perfluoropropane, sulfur hexafluoride, and perfluoromethane. NRL R4121.

Microworker for lubricating greases, by George M. Hain. U. S. Naval Research Laboratory. Apr 1946. 11p drawing, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109461

A new instrument is described for mechanically working a five gram sample of any pumpable lubricating grease and for measuring the consistency of this grease at any stage of the working process. It consists of two 5 cc hypodermic syringes connected together tip to tip through a shearing element. The technique used for measuring consistency is the conventional micropenetrometer needle but with a novel cup for holding the grease. This new method of testing greases so greatly speeds up the evaluation of this mechanical stability as to make probable significant advances in the development and specification of greases. NRL P-2817.

Replacement of tung oil in resins to be used in Navy aeronautical finishing materials. Second report, by Samuel B. Crecelius, W. H. Stewart, Harriet F. Kessler. U. S. Naval Research Laboratory. Jul 1944. 73p photo, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 109316

This report deals most specifically with the preparation of alkyd resins from dehydrated castor oil and other commercial oils to be used as substitutes for the tung oil containing alkyd, Rezyl 113, in P-27-b zinc chromate primer and AN-TT-P-656A zinc chromate primer. It describes the preparation of larger quantities of several of the tung oil free dispersion resins. Also included is the detailed preparation of the various tung oil free alkyds and data on the comparison of these with Rezyl 113 as a clear vehicle and of the final primers which were prepared from them as substitutes for Rezyl 113. For 1st report see PB 37964. NRL P-2274.

Specification huile pour turbines a vapeur (Specification for steam turbine oil no. 191 (and supplements thereto)). France. Ministry of Defense. Jul 1950. 12p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109047

S.T.M. no. 191E. Contains also: Correction no. 1 to specification 191 S.T.M. - Correction no. 2 to specification 191 S.T.M. of 17/7/1950 for turbine oil O. M. 100: Specification for gas-oils, no. 95 S.T.M. Translated from the French by F. Rizzo.
1. Turbines, Steam - Lubrication - France 2. Lubricating oils - Specifications - France 3. NAVSHIPS T 511.

Spreading characteristics of lubricating oils. Part II: Effects due to the presence of alcohols, phenols, acids, ketones, and esters, by W. Zisman. U. S. Naval Research Laboratory. 1940. 23p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109453

The work described in Part I of this report concerned the spreading upon water of aliphatic fatty acids dissolved in mineral oil and the work herein presented concerns the same mineral oils containing in solution either the alcohols, phenols, ketones or esters. Some additional related work on acids is also described. The essential characteristics of the oil spreading manifested by the various series of compounds studied are described. Plates are omitted. For Pt. 3 see PB 23120. NRL P-1621.

Synthetic liquid fuels. Annual report of the Secretary of the Interior for 1952. U. S. Bureau of Mines. Office of Synthetic Liquid Fuels, Pittsburgh, Pa.

Part I: Oil from coal. Jan 1953. 172p photos, drawings, diagrs, graphs, tables Available free from U. S. Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa. PB 109413

1. Fuels, Synthetic - Research 2. Fuels, Liquid - Production 3. Coal - Hydrogenation oils 4. BM RI 4942.

Part II: Oil from oil shale. Jan 1953. 144p photos, drawings, diagrs, graphs, tables Available free from U. S. Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa. PB 109414

1. Fuels, Synthetic - Research 2. Fuels, Liquid - Production 3. Shale oil - Production 4. Oil shales - Hydrogenation 5. BM RI 4943.

HIGHWAYS AND BRIDGES

Highway-materials surveys, presented at the 31st annual meeting, Jan 1952. Highway Research Board. 1952. 121p photos, maps, diagrs, graphs Available from Highway Research Board, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $1.50. PB 109092

Contents: Foreword, by E. A. Finney. - How to use airphotos and maps for material surveys, by Ollin W. Mintzer and R. E. Frost. - Geologic considerations in relation to a materials survey, by James L. Young, Jr. and L. E. Gregg. - Geophysical methods of subsurface exploration applied to material surveys, by R. Woodward Moore. - Material inventories, by Tilton E. Shelburne.

1. Road materials - Research 2. Road materials - Bibliography 3. Soils - Survey 4. Photography, Aerial 5. NRC 247 6. HRB Bul 62.

Mapping and subsurface exploration for engineering purposes. Highway Research Board. 1952. 60p photos, drawings, diagrs, maps, graphs, tables Available from Highway Research Board, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $.90. PB 109401

National Research Council. Publication 252. Contents: Committee personnel. - Introduction, by Frank R. Olmstead, Chairman. - Geological survey mapping in the United States. - Soil investigation employing a new method of layer-value determination for earth resistivity interpretation, by H. E. Barnes. - Effect of native materials on roadbuilding in Ohio, by Harry E. Marshall.
1. Soils - Surveys 2. Soils - Trafficability 3. Soils - Resistivity 4. Maps, Soil 5. Road materials - Tests 6. Roads - Construction 7. HRB Bul 65 8. NRC 252.

Resealing joints and cracks in concrete pavements with hot-poured rubber-asphalt, by J. C. Robbers and John H. Swanberg. Presented at the 31st annual meeting, Jan 1952. Highway Research Board. 1952. 25p photos, graph, table Available from Highway Research Board, National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. $.45. PB 109094

This bulletin describes an experimental project conducted in Minnesota to study the cutting, cleaning and resealing of joints and cracks. The study includes methods, equipment, materials and costs. NRC 248. HRB Bul 63.

INSTRUMENTS

Biological and medical aspects of ionizing radiation: Small motion transducer for radiobiological research, by Everett O. Richey and Herbert B. Gerstner. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Dec 1952. 7p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 108653

A potentiometer has been used as an electromechanical transducer in muscle studies. Undistorted recordings of isotonic contractions were obtained even under conditions of high speed, low force, and high-radiation intensity. Experimental examples of practical application show the suitability of the potentiometer for investigating the effects of x-radiation on muscle twitches and for studying the correlation of mechanical contraction and action potential in the heart. AAF SAM Proj. 21-3501-0005, Report no. 2.

Centrifugally operated governor suitable for controlling the speed of small rotary-transformers and motors, by T. J. Davies. Gt. Brit. Royal Aircraft Establishment, Farnborough, England. Jul 1950. 19p drawings (1 fold), diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D.C. Microfilm $1.75, Photostat $2.50. PB 109299

British crown copyright.
1. Governors, Centrifugal - Gt. Brit. 2. RAE TN E1 17.

Characteristics of BF_3 counters and precautions to be adopted in their use, an A.E.R.E. report, by J. Sharpe and P. G. Salmon. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Dec 1952. 11p drawings, graphs, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 109241

Describes the general characteristics of BF_3 counters and gives recommendations for their application in various types of apparatus, including methods of mounting to eliminate electrical breakdown at the insulators. HD 810. S. O. code no. 70-674-1-16. AERE EL/1073.

Comparison of a Geiger counter with an ionization chamber, by C. O. Muehlhause. U. S. Naval Research Laboratory. Feb 1946. 11p drawings, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109439

The output of a standard type of Geiger counter used in X-ray dosage meters was calibrated in roentgen units for the range 70 to 220 KV. The roentgen response paralleled counting rate in this range within $\pm$ 10%. NRL H-2750.

Constant time interval reference potential indicator as applied to R-C coupled amplifiers, by E. W. Kammer. U. S. Naval Research Laboratory. Jun 1945. 17p photos, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109311

A. C. amplifiers employing R-C coupling networks between stages are unsatisfactory for many applications which require the amplification of signals composed entirely or partially of low frequency and direct current components. This report describes a device applicable to an A. C. amplifier which permits the observation of signals composed of frequencies from zero to an upper limit imposed by the usual conditions for A. C. amplifiers. NRL O-2562.

Development of an adapter to give simultaneous radar and D-F signals on the PPI of a radar system, by W. Fraumann and P. A. Guarino. U. S. Naval Research Laboratory. Sep 1944. 12p photos, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109293

This report describes a system for transcribing an indication of bearing from the model CXGH direction finding equipment onto a radar plan position indicator. The "figure 8" pattern of the direction finding equipment is superimposed on the regular PPI pattern. The operator can then identify targets when the radar bearing and CXGH bearing coincide. No internal changes are required in the PPI to present

this information, and only slight modifications of the CXGH are required. This system is also readily adaptable to other types of direction finding equipment. NRL R-2356. NAVSHIPS Prob S584 R-C.

Electron microscope, by Herbert Friedman and LaVerne S. Birks. U. S. Naval Research Laboratory. Mar 1943. 43p photos, drawings Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.25.
PB 109223

1. Microscopes, Electron 2. NRL H-2012.

Factors affecting choice of operating frequency for distance measuring equipment, by L. S. Schwartz. U. S. Naval Research Laboratory. Jun 1946. 27p diagr, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 109425

1. Instruments, Measuring - Efficiency 2. Distance - Measurements 3. Indicators, Distance - Radio frequencies 4. NRL R2853.

Geiger counter tubes. U. S. Naval Research Laboratory. May 1949. 125p photos, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.00, Photostat $16.25. PB 109215

1. Geiger counters.

Harwell computer, by E. H. Cooke-Yarborough. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Mar 1953. 4p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109296

HD. 856. British crown copyright.
1. Computers, Electronic - Gt. Brit. 2. Atomic power - Research - Gt. Brit. 3. AERE EL/M78.

Improved electronic analog computing circuit, by W. A. McCool. U. S. Naval Research Laboratory. Feb 1949. 18p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109195

An improved electronic analog computing circuit, employing only two vacuum tubes and characterized by both simplicity and accuracy of computation, is described and analyzed. The theoretical error is calculated for integration, differentiation, and constant multiplication with step-function and sine-wave forms of excitation. NRL P3423.

Instrumentation literature and its use, a guide and source list, prepared by Julian F. Smith under the general direction of the Technical Information Division, Library of Congress for the Office of Basic Instrumentation, National Bureau of Standards. U. S. Library of Congress. Technical Information Division. Oct 1952. 131p Available free from Office of Basic Instrumentation, National Bureau of Standards, Washington 25, D. C.
PB 108952

Investigation into the temperatures experienced by wrist watches worn in various climates, by B. Hollaway. Gt. Brit. Royal Aircraft Establishment, Farnborough, England. Mar 1951. 4p fold map Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109303

Technical memo no. LA.P. 427. British crown copyright.
1. Watches, Wrist - Temperature - Gt. Brit.

Liquid filled seismic type velocity meter, Paul S. Symonds and Irwin Vigness. U. S. Naval Research Laboratory. Dec 1943. 13p diagr, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50.
PB 109253

A theoretical study has been made of liquid filled velocity meters. This study has determined fundamental design considerations to which a velocity meter of this type must adhere if suitable transient characteristics are to be obtained. NRL O-2209.

Manufacture of Zehnder-Mach interferometer, by Ernst R. G. Eckert, R. M. Drake, Jr., Eric Soehngen, edited by T. J. Keating. U. S. Air Materiel Command. Engineering Division. Power Plant Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Aug 1948. 28p photos, fold drawings, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75.
PB 109152

For research studies on power plant components, a Zehnder-Mach interferometer with eight inch glass plates was designed, manufactured and tested. In this report, the basic considerations underlying the design, the instrument in detail and the results of the tests are presented. Drawings and photographs of the instrument illustrate the description, photographs of the interference field itself, and combined interference Schlieren-photos of physical processes easy to realize, such as free convection around heated bodies, gas jets and candle flames, show the performance of the instrument. AAF TR 5721.

Measurement and control of process variables by instrumentation, papers from the fourth annual short course in industrial instrumentation, Feb

2-4, 1953, sponsored by the Dept. of Chemical Engineering. Florida. Engineering and Industrial Experiment Station, Gainesville, Fla. Jan 1953. 41p photos, diagrs, graphs Available from Florida Engineering and Industrial Experiment Station, Gainesville, Fla. $1.00. PB 108717

Engineering progress at the University of Florida, vol. 7, no. 1. Contents: What instruments will do for you, by R. D. Webb. - Process characteristics and controllers, by George Howard. - Instrumentation in a steam generating plant, by M. J. McWherter. - Instrumentation in a water purification plant, by William W. Aultman. - Fundamentals of temperature measurement and control, by J. E. MacConville. - Instrumentation for combustible gas analysis, by Charles Johnson, Jr. - Control valve maintenance, by Paul Wing, Jr.
1. Instruments, Industrial 2. Instruments, Measuring - Pressure 3. Instruments, Measuring - Temperature 4. Instruments, Gas analysis 5. Steam-generation - Equipment 6. Water - Purification equipment 7. Valves, Control - Maintenance and repair 8. F EES B 58.

Measurement of betatron radiation with Geiger-Mueller counters, by C. O. Muehlhause and H. Friedman. U. S. Naval Research Laboratory. Jun 1946. 13p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109342

The response of Geiger-Mueller counters to pulsed radiation was investigated theoretically for two cases: (1) when the counter dead-time exceeds the duration of the pulse of radiation: (2) when the counter dead-time is shorter than the pulse duration but not less than one half of it. The analysis indicated that the G-M counter could be applied successfully to monitoring radiographic exposures with Betatron radiation. Experiments were performed with X-radiation from the two million volt Betatron. NRL H-2858.

New method of calibrating field strength measuring equipment, by Harold E. Dinger and William E. Garner. U. S. Naval Research Laboratory. Nov 1952. 22p photos, drawing Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109442

A new method of calibrating radio interference and field strength measuring equipment employing shielded loop antennas has been developed. It is based on the concept of the shielded loop antenna acting as a unity coupled transformer; the shield being the primary and the inner conductor the secondary. The principal advantages of the method are: simplicity, wide range of calibration levels, and adaptability to field use. NRL MR83.

Photographic recording of high-speed cathode-ray oscilloscope traces, by Harold J. Peake. U. S. Naval Research Laboratory. Mar 1953. 23p photos, graphs Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 111160

An oscilloscope recording system has been designed to provide means for recording extremely fast transient voltage waveforms. Reliability, ease of operation and calibration, and a simple film processing procedure have been obtained. NRL R4112.

Recording gas flowmeter, by A. C. Young. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Dec 1952. 6p drawing, diagr, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 108710

Contract AF33(038)-422.
1. Meters, Flow - Gas 2. Washington. University. School of Medicine. Dept. of Physiology and Biophysics, Sealle, Wash. 3. AAF AAL Proj. 22-1301-0002.

Schering bridge method of corona detection in cables, by R. V. Talbot and D. C. DePackh. U. S. Naval Research Laboratory. Feb 1944. 22p photos, drawings, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109266

1. Instruments, Electrical measuring 2. Cables, Electric - Dielectric losses 3. Corona discharge - Measurement 4. Schering bridge (Dielectric measurements) 5. NRL R-2238.

Sensitive Geiger-Muller counters for detection of gamma rays, by Herbert Friedman. U. S. Naval Research Laboratory. Jun 1942. 24p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 109273

The various factors determining the efficiency of a gamma ray counter and its applicability as a detector of gamma radiation are evaluated. As an illustration of the practical application of the theory to the construction of an ultra-sensitive counter, such a counter has been built and tested. The results verify the theory and prove that gamma ray counters may be constructed with much greater sensitivity than the simple Geiger-Muller tube counter. In estimating the ultimate range of counters for detection of radium, criteria for "detection" are discussed. NRL M-1886.

Sensitivity, frequency response and noise of photothermal detectors, CJU serial no. 6 and serial no. 7, by H. S. Stewart and D. H. Gleason. U. S. Naval Research Laboratory. Apr 1946. 9p drawing, diagr, graphs Available from Library of Congress, Publication Board Project, Washington

25, D. C. Microfilm $1.25, Photostat $1.25. PB 109460

1. Detectors, Photothermal - Tests 2. NRL H-2806.

Study of the Pauling oxygen meter toward its possible adaptation to Naval use, by Myron H. Boyer. U. S. Naval Research Laboratory. Jan 1943. 47p diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.25. PB 109250

Stability of the calibration and performance over a period of about 6 months was studied, during which time the instruments were subjected to intermittent usage and handling under general conditions. In addition, tests were made under certain disturbing conditions simulating as nearly as possible those to be encountered on shipboard. NRL P-1986.

Test of six wire wound style A fixed resistors submitted by Hardwick, Hindle, Inc., prepared by Harold A. Brinkman. U. S. Naval Research Laboratory. Oct 1942. 11p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109248

1. Resistors, Wire wound - Tests 2. Resistors, Fixed - Tests 3. NRL R-1947 4. NAVSHIPS Prob M3-38.

Thunderstorm electricity. New Mexico. School of Mines. Research and Development Division. Report no. 5, Jan 1, 1948 through Mar 31, 1948, under Contract no. W36-039-sc-32286, by S. E. Reynolds. Mar 1948. 35p drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 108762

The construction and operation of a very small and efficient generating voltmeter which may be used either as a field meter or as an electrometer are described. Curves and charts which show the sensitivity and response characteristics of the instrument in both applications are presented. Direct ink-recording without secondary amplification is achieved, and the total power consumption of the instrument is less than 0.2 watt. The construction of a simple direct recording tube electrometer is also described. Charts showing the sensitivity characteristics of the instrument are presented. The very small size of the instrument (5/8" x 5-1/2") permits it to be readily assembled with other apparatus for electrostatic measurements.

Wind tunnel experiments with the Defense Research Laboratory apparatus for the measurement of longitudinal stability derivatives at supersonic speeds, by R. E. Wilson. U. S. Naval Ordnance Laboratory, White Oak, Md. Sep 1951. 69p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 108805

This report presents in detail the results of an investigation of a "cantilever spring type" dynamic stability apparatus at Mach Number 2.48. The data from the tests are presented in detail in the body of this report and a brief qualitative comparison is made. Aeroballistic research report no. 51. NAVORD 2206.

LEATHER AND LEATHER PRODUCTS

Dyes and varnishes for leather. I. G. Farbenindustrie A. G., Krefeld, Ger. 1946. 26f drawings, diagr, tables (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Enlargement Print $5.00. PB 109192

English abstract included. Abstract available as PB 109192s. 2p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25.
1. Leather - Dyes and dyeing - Germany 2. Leather - Finishing - Germany 3. Paints, Eukanol - Germany 4. Kasara Eukanol - Germany 5. Dyes, Nitro - Manufacture - Germany 6. Micro BIOS DOCS/2655/1701 7. Micro BIOS FD 212/47, Frames 1-17+5.

LUMBER AND WOOD PRODUCTS

Comparative investigations on native and isolated lignin, by Erik Hägglund and Herman Richtzenhain. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Jun 1952. 4p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109123

Reprinted from Tappi 35 (1952) p. 281-284.
1. Lignin - Alcoholysis - Sweden 2. Lignin - Sulfonation - Sweden 3. Wood - Sulfonation - Sweden 4. Wood - Alcoholysis - Sweden 5. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 106.

Kiln operator's handbook, by W. C. Stevens and G. H. Pratt. Gt. Brit. Dept. of Scientific and Industrial Research. Forest Products Research Laboratory, Aylesbury, England. 1952. 153p photos, drawings, graphs, tables (1 fold) Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $2.40. PB 108927

S. O. code no. 47-173.
1. Kilns - Gt. Brit. 2. Kilns - Design - Gt. Brit. 3. Wood - Drying - Gt. Brit. 4. Timber - Seasoning - Gt. Brit.

Reaction between cellulose and heavy water, by Karl Erik Almin. Svenska Träforskningsinstitutet.

UNIVERSITY OF MICHIGAN LIBRARIES

Träkemi och Pappersteknik. Jul 1952. 4p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109126

Reprinted from Svensk Papperstidning 55 (1952) p. 767-770. Summaries in German and Swedish.

1. Cellulose - Kinetic reactions - Sweden 2. Water, Heavy - Infrared spectrum - Sweden 3. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 100.

Some aspects on lignin structure, by Erich Adler and Bengt O. Lindgren. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1952. 13p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109124

Reprinted from Svensk Papperstidning 55 (1952) p. 563-575.
1. Lignin - Biosynthesis - Sweden 2. Lignin - Reactions - Sweden 3. Lignin - Chemistry - Sweden 4. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 107.

MACHINERY

Advanced casting techniques and processes. Summary and final report of casting research and development program developed under Contract NObs-45472, Jun 20, 1947 through Apr 30, 1950. Alloy Engineering and Casting Co., Champaign, Ill. May 1950. 147p photos, drawings Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.75, Photostat $18.75. PB 109239

Report prepared under Contract NObs-50130.
1. Casting 2. Machines, Casting 3. Alloys, High temperature - Casting.

Canning and preserving, lacquer and spraying of tins. Booklets and documents by J. A. Smalbach Blechwarenwerke A. G., Braunschweig, and Blechwarenfabrik Fritz Zeuchner, Seesen, and drawings of machines for can production. 1936-Jun 1945. 812f photos, drawings, graphs (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $9.00, Enlargement Print $107.50. PB 109191

English abstract included. Abstract available as PB 109191s. 5p. Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. See abstract for complete contents. Includes 25-page report: Zinnarme und zinnfreie konservendosen in Deutschland (German preserving cans containing little or no tin), by Edward Nehring. Jun 1945. - Die Zuechners: Founding and development of a German industry, 1797-1937). - Lackierung als totaler korrosionschutz. Porosität und porenprüfung von anstrichen (Lacquering as total protection against corrosion. Porosity and pore-testing of coatings), by Reichsschuss für Verpackungswesen. 1944.
1. Canning industry - Germany 2. Containers - Manufacture - Germany 3. Containers, Food - Manufacture - Germany 4. Containers, Gas - Manufacture - Germany 5. Containers, Petroleum - Manufacture - Germany 6. Containers - Coatings - Germany 7. Lacquers - Germany 8. Can manufacturing machinery - Germany 9. Zyklon (Trade name) 10. Sila (Cans) - Germany 11. "Rekord" (Canning machine) 12. Micro BIOS FD 54/46, Frames 1-65, 81-84, 87, 89-92, 96-230, 358-647, 732-854, 857-911 13. BIOS DOCS 4232.

Causes of porosity and leakage in nonferrous castings (foundry details for fuel booster pump), by Ralph H. Brouk. U. S. Naval Research Laboratory. Feb 1944. 19p photos, drawing, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109257

Five fuel booster pumps of Hydraulic Bronze were cast by various foundry techniques. Although required to pass a pressure test of 200 lbs. per sq. in., three of the castings withstood 1000 lbs. per sq. in. for fifteen minutes without evidence of any leakage whatever. Complete details of the foundry procedures and hydrostatic testing are given. NRL M-2228.

Design, calibration and correction of a 1.6 Mach number nozzle, by J. G. LaBerge. Canada. National Aeronautical Establishment. Nov 1952. 25p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. Available for exchange from National Aeronautical Establishment, Montreal Road, Ottawa, Canada. PB 108903

The calculation of the theoretical liner profile for M = 1.6, calibration tests and the method of correcting the liner to improve the velocity distribution in the working section of a 10 in. by 10 in. wind tunnel are described. NAEC LR41.

Fabrication of dies for printed circuits, by R. Brookes. Gt. Brit. Ministry of Supply. Telecommunications Research Establishment, Gt. Malvern, Worcs, England. Sep 1950. 10p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109300

British crown copyright. T.R.E. Technical note no. 93.
1. Circuits, Electronic - Printed - Dies - Gt. Brit. 3. Dies - Manufacture - Gt. Brit.

Lagerreibung und grenzflächenerscheinungen (Bearing friction and interface phenomena), by S. Kiesskalt. Translated by Werner A. Pohle, edited by F. A. Raven and Margaret W. Raven. Feb 1953. 16p graphs, table Available from Library of Congress, Publication Board Project, Wash-

ington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109180

Translated from Zeitschrift des Vereins Deutscher Ingenieure, vol. 87, no. 21-22, 1943, p. 321-324.
1. Bearings, Friction - Lubrication - Germany 2. Lubricants - Viscosity - Germany 3. NAVSHIPS T514 4. STS 161.

Plastische verhalten umlaufender stahlrollen bei punktberührung (Plastic behavior of revolving steel rollers under point contact), by G. Niemann and K. W. Kraupner. Translated and edited by F. A. Raven. Mar 1953. 32p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109088

Translated from Verein Deutscher Ingenieure. Forschungsheft 434, supplement to Forschung auf dem Gebiete des Ingenieurwesens, issue B, vol. 18, 1952, p. 5-15.
1. Roller bearings, Steel - Plastic deformation - Germany 2. Roller bearings - Testing equipment - Germany 3. NAVSHIPS T517 4. STS 162.

Rapid method for use in design of turbines within specified aerodynamic limits, by Richard H. Cavicchi and Robert E. English. U. S. National Advisory Committee for Aeronautics. Apr 1953. 88p diagrs, graphs (part fold) tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109350

1. Turbines, Axial - Aerodynamics 2. Turbines, Axial - Flow 3. Turbines, Axial - Design 4. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 5. NACA TN 2905.

Regenerator heat exchangers for gas-turbines, by J. E. Johnson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1948. 72p diagrs, graphs, tables (1 fold) Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $4.50. PB 108937

A series of tables and curves have been prepared from which the efficiency of a regenerator can be calculated if the operating conditions and heat transfer coefficients are known. The tables and curves cover a range of lengths and blow times appropriate to gas-turbine conditions. Measurements of heat transfer and pressure drop coefficients have been made on several examples of matrix of both the gauze and flame trap type inconditions similar to those in a gas turbine. A number of examples have been worked out from the experimental results to show the relative importance of the different variables on the performance of typical regenerators. Cover date is 1952. S. O. code no. 23-2630. ARC RM 2630.

Resharpening and reclaiming used files, by Roy W. Tindula. U. S. Office of Technical Services. May 1953. 7p Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111158

1. Files and rasps - Sharpening 2. OTS IR 11328.

Study of size of diamonds in diamond drilling, by Robert J. M. Miller. Missouri. University. School of Mines and Metallurgy. Sep 1952. 68p photos, graphs, tables Available from University of Missouri, School of Mines and Metallurgy, Rolla, Missouri. PB 109045

Bulletin, technical series, no. 81. Publication of Missouri School of Mines and Missouri State Mining Experiment Station.
1. Diamonds - Drilling 2. Diamond tools.

MEDICAL RESEARCH AND PRACTICE

Altitude stress in subjects with impaired cardiorespiratory function. B: Studies on pateints with angina pectoris, by John P. Marbarger, Pablo H. Wechsberg, Gordon F. Vawter, and Sanford A. Franzblau. U. S. Air Force. School of Aviation Medicine. Randolph Field, Texas. Mar 1953. 26p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109392

Circulatory and respiratory functions were studied on eight patients with uncomplicated angina pectoris during decompression chamber flights to simulated altitudes of 10,000 and 18,000 feet. Objective and symptomatic observations showed that, critical levels of safety were approached at 10,000 feet and manifestations of severe stress developed rapidly on exposure to 18,000 feet. AAF SAM Proj. no. 21-23-019, Report no. 2.

Angiostomy cannulae for the study of pulmonary circulation, by George W. Mather, G. G. Nahas, Allan Hemingway. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Mar 1953. 7p photo Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109410

Contract no. 18 (600)-413.
1. Veterinary instruments and apparatus 2. Minnesota. University. School of Veterinary Medicine 3. AAF AAL Proj 22-1301-0002, Research report.

Basal metabolism of the Eskimo, by Kaare Rodahl. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Dec 1952. 113p photos, maps, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photostat $15.00. PB 108709

1. Eskimos - Metabolism 2. AAF AAL Proj 22-1301-0001, Part 2.

Effects of hypothermia on brain activity, by Werner K. Noell and Stanley A. Briller. U. S. Air Force. School of Aviation Medicine, Randolph Field, Tex. Jan 1953. 34p diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 108652

In experiments on rabbits it was revealed that hypothermia produces a preconvulsive state of brain activity. Hypothermia also modified the action of metrazol, caffeine, and coramine on the respiratory and cardiovascular system. AAF SAM Proj. 21-1202-0003, Report no. 1.

Evaluation of a modification of the Bennett respiratory volume meter, by Clayton S. White and Nils P. V. Lundgren. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Feb 1953. 6p photo, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109393

The meter was designed and calibrated for use in the inspiratory portion of the respiratory circuit, but with simple precautions can be used to meter expiratory air volumes and under circumstances involving constant rather than intermittent flow of gas. AAF SAM Proj. no. 21-1402-0001, Report no. 2.

Physiological effects of mechanical vibration, by Victor Guillemin, Jr. and Pablo Wechsberg. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jan 1953. 18p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108697

Small groups of rats subjected to mechanical vibration under controlled conditions of duration, intensity, and frequency showed alterations of vascular tonus as expressed in terms of delayed rewarming of vibrated extremities after standard chilling. AAF SAM Proj. no. 21-1203-0002.

Problems of high-intensity noise, a survey and recommendations, by Walter A. Rosenblith, Douglas E. Wheeler and Harald Smedal. Harvard University. Psycho-Acoustic Laboratory. Dec 1952. 29p diagrs, graphs, tables (1 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109090

Contract N5ori-76, Project order II. Appendix I is Effects of noise on psychomotor efficiency, by S. S. Stevens and others. OSRD 274, Dec 1941. Appendix 2 is summary of Development of ear wardens, by W. A. Shaw, P. S. Veneklasen, S. S. Stevens and others. OSRD 5122, Jul 1945.
1. Noise - Physiological effects 2. Noise - Psychological effects 3. Ear plugs 4. OSRD 274 5. OSRD 5122 Summary 6. PNR 133.

Quantitative study of closed cerebral injury. I: Production by liquid nitrogen of cerebral lesions with observations on interacranial pressure, blood pressure, and papilledema, by Raymond A. Clasen, David V. L. Brown, Seymour Leavitt, and George M. Hass. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Dec 1952. 19p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108654

Areas of the brain were frozen by application of an instrument—containing isopentane cooled with liquid nitrogen—to the external surfaces of the intact calvarium for 2 to 10 minutes. The method provides a dependable quantitative basis for the study of the treatment of acute, closed cerebral injuries. AAF SAM Proj. 21-2301-0007, Report no. 1.

Rapid technique for detecting the presence of fungi in skin scrapings, hairs, other tissue and exudates, by F. W. Bleberdorf. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Feb 1953. 6p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109072

A procedure is described for the detection and identification of fungi in skin scrapings and various human exudates. The use of Pontamine Sky Blue in aqueous solution is recommended for staining of fungous elements. NaOH or KOH is used for digestion of the various infected tissues. All materials is used in the recommended procedure are inexpensive and readily available. The technique is relatively simple. AAF SAM Proj. no. 21-1401-0005, Report no. 1.

Review of literature on the relative efficiency of the dominant and the nondominant eye, by Alberta S. Gilinsky. Columbia University, New York, N. Y. Jan 1952. 24p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109178

Contract no. AF33(038)-22616.
1. Ocular dominence - Bibliography 2. Eyes - Physiology 3. Visual research - Bibliography 4. AAF WADC TR 52-1.

Temperature changes of pulmonary blood during exposure to cold, by George W. Mather, G. G. Nahas, Allan Hemingway. U. S. Air Force. Arctic Aeromedical Laboratory, Ladd Air Force Base, Alaska. Mar 1953. 10p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109411

Contract no. 18 (600)-413.
1. Blood - Temperature - Effect of cold 2. Cold - Physiological effects 3. Minnesota. University. School of Veterinary Medicine 4. AAF AAL Proj. 22-1301-0002, Research report.

METALS AND METAL PRODUCTS

Analysis of uranium-zirconium alloys, by G.W.C. Milner and A. F. Skewies. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Mar 1953. 16p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 109385

A satisfactory procedure is described for the analysis of uranium-zirconium alloys containing up to 25% zirconium. It is based on the separation of the zirconium from the uranium by dissolving the cupferron complex of the former element into chloroform. HD 855. S. O. code no. 70-674-1-36. AERE C/R 1126.

Boron hydrides. Final report on Contract 173s-10421 from University of Chicago, by H. I. Schlesinger. U. S. Naval Research Laboratory. Jul 1946. 85p drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photostat $11.25. PB 109429

This final report is essentially a guide to the contents of the monthly reports, which are incorporated herein. The subject matter is arranged in accordance with the compounds studied. Extension of Contracts N173s-9058 and s-9820. Includes Monthly reports no. 12-23, Jun 20, 1945-Jun 30, 1946. NRL P-2964.

Brazing alloys for use in hollow steel propeller blades, by L. R. Jackson and J. B. Holding. Battelle Memorial Institute, Columbus, Ohio. Jan 1944. 77p photos, drawing, tables (part fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 109420

In addition, specific problems confronting the propeller blade manufacturer were studied. Liquidus temperatures were determined for most of the alloys studied, as an aid in selecting the proper temperature for furnace brazing. Furnace brazing methods to produce silver soldered bars with fatigue properties superior to those heretofore obtained have been developed. Joints to withstand more than 50,000 psi stress in the outer fibers of the steel for 10,000,000 cycles in the fatigue machine can be brazed successfully. Contract no. W-535-ac-35428, Final report.

Calculation of tensile strength and yield point of normalized and annealed steels from the chemical composition, by Paul D. Gorsuch and David L. Newhouse. U. S. Naval Research Laboratory. Sep 1945. 90p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.75, Photostat $11.25. PB 109456

A set of multiplying factors for calculating tensile strength and yield point from chemical composition has been developed. The change in these factors due to change in cooling rate has been determined. Curves correlating cooling rate in air with thickness of plates and diameter of rounds are shown. It is possible through the use of these factors and a knowledge of the cooling rate to calculate the tensile strength and yield point for any position in a normalized steel section. NRL M-2641.

Causes for porosity and leakage in nonferrous castings: Identification of defects in gun metal by means of radiography, a partial report, by William H. Baer. U. S. Naval Research Laboratory. Sep 1945. 33p photos, drawings Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.75. PB 109457

Defects commonly found in gun metal castings have been produced artifically in gradations of severity in cast plates 8 inches x 6 inches x 1 inch. Distributed shrinkage, not tears, sand and slag inclusions, and gas porosity were identified by radiography of the one inch plates and by radiography of thin slices taken from the defective regions. NRL M-2646.

Comparative study of the electrical contact properties of titanium, by Samuel Jurich. U. S. Air Force. Wright Air Development Center. Components and Systems Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Feb 1952. 76p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.50, Photostat $10.00. PB 108948

Electrical contact properties of commercially pure titanium have compared to those of copper, aluminum, and steel. To determine the relative effect of heat and moisture on titanium when used with dissimilar metals, a comparative study of titanium, copper, aluminum, and steel was undertaken. Various assemblies of bolts, washers, nuts, terminals, and rivet-terminal combinations were mounted on a panel of each of the metals and were then subjected to high humidity for a three-month period. Results indicated that care should be exercised in the selection of combinations of metals to be used to electrically connect wire to titanium chassis or panels. AAF WADC TR 52-289.

Controlled welding of medium alloy steels. First partial report, by Clarence E. Jackson. U. S. Naval Research Laboratory. Aug 1943. 14p photo, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 109321

A test method is described which permits the proper choice of preheat and postheat temperatures so that it is possible to set up shorter welding schedules with insurance of optimum ductility. NRL M-2154.

Design for test coupons for steel coatings, by H. F. Bishop and R. C. Wayne. U. S. Naval Research Laboratory. Jul 1944. 35p photos, drawings, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.00. PB 109424

Several designs of test coupons were cast and their efficiencies in producing satisfactory blanks for tensile tests were compared on the basis of mechanical properties and economy of yield. Coupons of the cloverleaf type in which the tensile blanks are spaced around a central section not only give properties equal to or better than those of other more conventional types, but require much less riser metal per specimen. The use of necking cores for facilitating removal of blanks from coupons was investigated. The meaning and limitations of coupon testing are discussed briefly. NRL M-2335.

Direct-reading design charts for 24S-T3 aluminum-alloy flat compression panels having longitudinal formed hat-section stiffeners and comparisons with panels having Z-section stiffeners, by William A. Hickman and Norris F. Dow. U. S. National Advisory Committee for Aeronautics. Mar 1953. 71p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 108987

1. Plates, Flat - Compression tests 2. Plates, Stiffened - Compression tests 3. 24S-T3 (Aluminum alloy) 4. Stresses - Compression 5. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 6. NACA TN 2792.

Factors for the calculation of hardenability, by Sidney Siegel and J. Gardner Brooks. U. S. Naval Research Laboratory. Sep 1945. 95p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 109279

Factor curves differing radically from those presented by previous investigators in the field of hardenability have been determined. A critical appraisal of the curves for the basic alloying elements in steel and re-investigation of their effect on hardenability revealed that the factors could be best represented by curves rather than straight lines. A factor curve for carbon approximately three times higher than reported by Grossmann and a manganese factor curve much lower than previously reported have been derived. Factor curves for other alloying elements were developed on the basis of the new curves for carbon and manganese. NRL M-2619.

Ferromagnetic resonance in some ferrites as a function of temperature, by Daniel W. Healy, Jr. Harvard University. Cruft Laboratory. Aug 1951. 99p photos, drawing, diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.25, Photostat $12.50. PB 108528

The ferromagnetic resonance phenomenon was studied in certain ferrites as a function of temperature. Nickel-ferrite single crystals were investigated over a temperature range from -195°C to +588°C. From these measurements, the line width, first- and second-order anisotropy constants, and spectroscopic g-value were derived and plotted as a function of temperature. In addition, measurements were made on polycrystalline manganese-zinc, nickel-zinc and nickel ferrites. From these data the g-values and variation of the saturation magnetization were plotted as a function of temperature. Contract N5ori-76, Task order no. 1, NR-078-011. HU C L TR 135.

Final report on segregation in small steel castings, by H. F. Bishop. U. S. Naval Research Laboratory. Nov 1948. 31p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109287

Studies continued to determine effect on carbon segregation of such factors as size and shape of riser and casting, and design of riser contact. Degree of segregation under "neck-down" risers is found to vary directly with neck length and section thickness and inversely with neck diameter. Attention to various features of riser design minimizes segregation beneath "knock-off" risers. Centerline segregation, found in slender castings, is reduced by increasing taper of the casting for more complete feeding. NRL M-3389.

Growing of lead titanate crystals and some of their properties, by H. H. Rogers. Massachusetts Institute of Technology. Laboratory for Insulation Research. Dec 1952. 18p photos, drawing, diagrs, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108708

Small, high-purity, single crystals of lead titanate were grown from a melt consisting of TiO_2 and an excess of PbO. The preparation of a large single crystal by the Bridgman-Stockbarger method is described. The chemical reactivity of $PbTiO_3$ is discussed and data on the thermal dissociation into PbO vapor and by X-ray measurements. The chemical reactivity of $PbTiO_3$ is discussed and data on the thermal dissociation into PbO vapor and solid TiO_2 are given. Contracts N5ori-07801 and N5ori-07858. MIT LIR TR 56.

Hardenability of cast steel, by Kenneth L. Clark and John H. Richards. U. S. Naval Research Laboratory. Jun 1944. 37p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109459

Results of this investigation show that cast and forged steels of identical compositions, in the low and medium alloy range, have comparable hardenability when variations in grain size are considered. A new curve correlating Jominy distance with Grossmann's index of hardenability, D_I, was determined. Grossmann's hardenability factors were

used throughout this study with the exception of the curve for molybdenum. A new molybdenum curve was determined from a reconsideration of Grossmann's data. Appendix: Development of Jominy distance vs. D_I curve. - Sample calculation of D_I by Grossmann's method. NRL M-2301.

Interpretation of notched-bar impact test, by Clarence E. Jackson, Myron A. Pugacz, Frank S. McKenna. U. S. Naval Research Laboratory. Nov 1943. 30p photos, diagrs, graphs (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109331

The effect of testing temperature, dimension of specimen and notch, speed of test are reviewed. A liner relation between energy absorption and work hardening has been deduced from observations on a number of types of notched-bar impact specimens under a variety of test conditions for two plain carbon steels. NRL M-2198.

Linear time-temperature relation for extrapolation of creep and stress-rupture data, by S. S. Manson and A. M. Haferd. U. S. National Advisory Committee for Aeronautics. Mar 1953. 49p graphs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109101

1. Creep - Theory 2. Stresses - Theory 3. Alloys, High temperature - Tensile properties 4. Mathematical equations and solutions 5. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 6. NACA TN 2890.

Materials for handling fuming nitric acid, by Frank H. Beck, M. L. Holzworth, Mars G. Fontana. Ohio State University Research Foundation, Columbus, Ohio. Mar 1952. 31p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109151

Welded drums of Type 347 stainless steel fail by "knife-line" attack if the heat-affected zone (destabilized zone) is subjected to a sensitizing treatment (900°-1500°F) after welding. Sensitizing treatments cause the precipitation of chromium carbide in the grain boundaries and intergranular corrosion results. Failure by knife-line attack has not been observed in extra-low carbon Type 347 stainless steel. Type 347 stainless steel is not susceptible to stress corrosion by fuming nitric acid at 160°F. Contract AF33(038)-10381. AAF TR 6519, Part I.

Mechanical properties of several national emergency (NE) steels, by Sidney Siegel. U. S. Naval Research Laboratory. Jul 1943. 22p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109335

The mechanical properties of laboratory induction furnace and commercial heats of NE 9430, 9437 and 9640 were determined. The investigation revealed that the ductility of these steels is as good as that of the SAE steels they replace. NRL M-2139.

Mechanism of plastic flow in titanium. Sylvania Electric Products, Inc. Metallurgical Laboratories, Bayside, N. Y. Second quarterly progress report, Feb 1 to May 1, 1951, under Contract no. AF33-038-16031, by C. A. Dube, F. Perkins, B. H. Alexander. Jul 1951. 13p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109154

This report describes the main lines of progress in a program designed to study the mechanism of plastic flow and stress-relaxation in titanium. During the period covered by this report, a) the slip and twinning planes have been determined, b) recrystallization studies have been made to determine the kinetics of primary recrystallization and the grain sizes resulting therefrom, c) a preliminary study has been made of the phenomenon of secondary recrystallization in titanium, d) the apparatus designed for the study of stress-relaxation has been completed and preliminary runs have shown the design to be satisfactory. Report no. YE51-0435. For 1st report see PB 109153, for 3d report see PB 109155.

Methods of casting steel torpedo parts, by H. F. Bishop. U. S. Naval Research Laboratory. Aug 1943. 23p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109226

Eight each of several torpedo parts and one each of two torpedo propellors were cast of a high fluidity, high strength copper steel. These parts, because of their thin irregular sections, present difficulties not encountered in the majority of steel castings. Photographs are included showing the methods used in gating and feeding. It was found that these parts could all be cast of steel although in some cases redesigning the casting would facilitate the work. NRL M-2142.

N.R.L. shock-fracture test for welded joints in connection with welding test #302. Second partial report, by A. R. Donaldson, F. H. Laxar, F. S. McKenna. U. S. Naval Research Laboratory. Sep 1943. 36p photos, drawings, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.00. PB 109329

First report is M-2050.
1. Joints, Welded - Fracture tests 2. Steel, Low alloy - Welding - Tests 3. NRL M-2163.

Oxidation of beryllium at high temperature. Illinois. Institute of Technology. Dept. of Chemistry, Chicago, Ill. Technical report no. 1 under Contract N7-onr-329, Task order II, by Daniel Cubicciotti. Jul 1949. 16p graphs, table Available from Library of Congress, Publication Board

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Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108748

1. Beryllium - Oxidation.

Plastic flow in titanium. Sylvania Electric Products, Inc. Metallurgical Laboratories, Bayside, N. Y. First quarterly progress report, Nov 1, 1950 to Jan 31, 1951, under Contract no. AF33-038-16031, by C. A. Dube and B. H. Alexander. Mar 1951. 4p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109153

Report no. YE 51-0421.
1. Titanium - Plastic flow 2. Titanium - Research.

Proceedings of the titanium symposium at Watertown Arsenal, Watertown, Mass., 8 October 1952. U. S. Ordnance Dept. Metallurgical Advisory Committee on Titanium. Oct 1952. 59p photos, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 109046

Information bulletin no. T5. Contents: Introduction, by F. Gorham Brigham, Jr. - Titanium comes of age, by Thurston T. Paul. - Industrial future of titanium, by B. S. Mesick. - Availability of titanium. I, by T. W. Lippert. - II, by W. C. Beck. - III, by Thomas E. Perry. - IV, by G. T. Fraser. - Titanium in ordnance, by Norman L. Reed. - Forging of titanium, by Richard J. Bullock. - Cold forming of titanium, by J. Walter Gulliksen. - Surface treating and corrosion of titanium, by George C. Keifer. - Welding of titanium, by Allan J. Rosenberg. - Grinding of titanium, by Gordon T. Rideout. - Tapping of titanium, by V. Jamilkowski. - Turning and milling of titanium, by Norman Zlatin. - Fundamental facts on machining titanium, by Dr. M. Eugene Merchant. - Titanium as a new products potential, by Francis G. Tatnall.
1. Titanium - Industrial use 2. Titanium - Availability 3. Titanium - Forging 4. Titanium - Cold working 5. Titanium - Corrosion resistance 6. Titanium - Weldability 7. Titanium - Grinding 8. Titanium - Tapping 9. Titanium - Milling 10. Titanium - Machining.

Reclamation and remelting of metal turnings, grindings, and sweepings, by Roy W. Tindula. U. S. Office of Technical Services. May 1953. 8p Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111162

1. Waste - Salvage 2. Scrap metal - Recovery processes 3. OTS IR 11289.

Relation of size of chill to bronze castings, by W. J. Richmond. U. S. Naval Research Laboratory. Apr 1946. 24p photos, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109458

The influence of size of chill and thickness of section on rate of solidification of bronze was investigated by means of pouring molten metal from partially solidified parallelopipeds. In general, steel chills should be about one-half the thickness of the casting for maximum effect. Graphite and carbon are much less severe chills than steel or cast iron and do not stick to the casting. An example of the use of chills to produce directional solidification is included. NRL M-2808.

Research directed to the development of conducting materials for field wires and cables. Armour Research Foundation, Chicago, Ill. Final report, by R. L. Moreen, R. A. Lubker, John M. Parks. Jul 1948. 69p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 108966

1. Wire, Copper alloy 2. Copper alloys - Electrical properties 3. ARF Proj 90-364B, Final report.

Research on the weldability of iron alloys: Bead-weld nick-bend test for weldability, by G. C. Luther. U. S. Naval Research Laboratory. Sep 1944. 46p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109292

In a survey of the various methods of measuring weldability by determining the ductility of the heat affected zone, no direct method was found which was applicable to the study of the weldability of steels in all thicknesses. The bead-weld nick-bend test is a weldability test designed to measure the effect of a welding technique upon the ductility of the heat affected zone of a steel. A test procedure is presented together with a discussion of variables affecting the bead-weld nick-bend test. The test procedure gives reproducible results and requires a test specimen which can be easily prepared using only a hack saw. NRL M-2352.

Research on the weldability of iron alloys. Effect of electrode diameter on T-bend results, by George G. Luther. U. S. Naval Research Laboratory. Jun 1944. 31p photos, drawing, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109286

This is a report of an investigation on the effect of welding technique on the results obtained with the T-bend test for 24 steels in $\frac{1}{2}$ inch thickness. It is shown that increasing the diameter of the electrode used in preparing a standard T-bend specimen in $\frac{1}{2}$ inch material increases the sensitivity of the T-bend test. The use of 3/16 inch diameter electrode to replace the standard 5/32 inch diameter electrode results in a lower angle at maximum load. In these tests it is noted that an increase in the time elapsing between welding and testing often is accompained by an improvement in ductility especially, if a low angle is found after one day time elapse. NRL M-2258.

Some observations on underbead cracking in welding of high-tensile low-alloy steel, by J. A. Rinebolt and J. O. Mack. U. S. Naval Research Laboratory. Mar 1949. 31p photos, drawings, graphs, tables Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $1.00. PB 111155

Description and results of test for detection and measuring of underbead cracks in welding of high-tensile steels and the effects of chemical and physical properties and welding conditions upon the formation of the cracks. NRL M3390.

Suitability of the Lehigh restrained cracking weldability specimen for Naval service, by J. A. Rinebolt. U. S. Naval Research Laboratory. Aug 1946. 27p photos, drawing, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109344

1. Steel plates - Cracking tests 2. Steel plates - Welds - Tests 3. Steel - Welding - Tests 4. NRL M-2948.

Survey of features of German powdered iron components, by S. G. Lutz. U. S. Naval Research Laboratory. Sep 1946. 122p photos, drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.00, Photostat $16.25. Limited supply available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $3.00. PB 109270

Appendix I is Remarks by W. J. Polydoroff.
1. Cores, Powdered iron - Germany 2. Iron powders - Dielectric properties 3. Iron powders - Mechanical properties 4. Electrical equipment - Components - Germany 5. NRL R-3029.

Weldability tests of high tensile steel (Lukens Steel Company), by Clarence E. Jackson. U. S. Naval Research Laboratory. Feb 1944. 37p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109268

Four steels of the manganese titanium-treated type have been studied as to their relative weldability. All four steels showed cracking in the heat affected zone. It is suggested that this behavior is due to the fact that the weld deposit has a much higher transformation temperature than the base metal. Bu Ships welding test no. 325. NRL M-2237.

METEOROLOGY AND CLIMATOLOGY

Bibliography of the meteorology of the Mediterranean, Middle East and South Asia areas, by Thomas A. Gleeson. Florida. University. Dept. of Meteorology. Apr 1952. 41p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109405

Contract no. AF 19 (122)-466. Scientific report no. 1.
1. Meteorology - Bibliography.

Impingement of water droplets on a cylinder in an incompressible flow field and evaluation of rotating multicylinder method for measurement of droplet-size distribution, volume-median droplet size, and liquid-water content in clouds, by Rinaldo J. Brun and Harry W. Mergler. U. S. National Advisory Committee for Aeronautics. Mar 1953. 73p photo, diagrs, graphs (part fold), tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109102

1. Flow, Incompressible 2. Drops, Liquid - Impingement on airfoils 3. Drops, Liquid - Size - Measurement 4. Clouds - Water content 5. Cylinders, Rotating - Ice accretion 6. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 7. NACA TN 2904.

Investigation of polarization of sky light. California. University. Dept. of Meteorology, Los Angeles, Calif. Under Contract no. AF19(122)-239.

Scientific report no. 2. Additional scattering functions for spherical particles, by Robert S. Fraser. Sep 1952. 25p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109014

1. Particles, Spherical - Scattering 2. Sky - Brightness - Polarization 3. Polarization, Atmospheric - Measurements 4. Mie-Deby theory (Particle scattering).

Scientific report no. 3. Tables relating to Rayleigh scattering of light in the atmosphere, by Gertrude Blanch. Nov 1952. 111p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Photostat $15.00. PB 109015

1. Sky - Brightness - Polarization 2. Polarization, Atmospheric - Measurements 3. Light - Scattering - Measurements 4. Rayleigh principle (Mathematics).

Investigation of the ice fog phenomena in the Alaskan area. Stanford Research Institute, Stanford, Calif. Report no. 5 covering the period 28 Dec 1951-31 Oct 1952 under Contract no. AF 19 (122)-634, by Elmer Robinson. Jan 1953. 47p photos, diagrs, map, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109346

Appendix contains abstracts of earlier reports.
1. Fog, Ice - Research - Alaskan 2. Atmosphere - Composition 3. Aerosols - Optical properties

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4. Cameras, Photomicrographic - Design 5. Transmissometers - Design 6. Precipitators, Electrostatic - Design 7. SRI Proj 473.

Method for determining cloud-droplet impingement on swept wings, by Robert G. Dorsch and Rinaldo J. Brun. U. S. National Advisory Committee for Aeronautics. Apr 1953. 29p diagrs, graphs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109374

1. Drops, Liquid - Impingement on airfoils 2. Trajectories, Water droplet - Calculation 3. Wings, Swept - Droplet impingement - Calculation 4. U. S. Lewis Flight Propulsion Laboratory, Cleveland, Ohio 5. NACA TN 2931.

Natural radiocarbon 14 measurement and applications. Columbia University. Lamont Geological Observatory, Palisades, N. Y. Quarterly progress reports nos. 9, 10, 11 under Contract no. AF19(122)-214, by J. Laurence Kulp. Jan 1953. 13p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109130

CU 9-53-AF-214-Geol.
1. Radiocarbon - Measurement 2. Atmosphere - Radioactivity - Measurement.

Project cirrus. General Electric Co. Research Laboratory, Schenectady, N. Y. Dept. of the Army project no. 3-90-07-022. Signal Corps project no. 24-172B-0.

Occasional report no. 35: Concentration of ice nuclei at the summit of Mt. Washington, by Vincent J. Schaeffer. Aug 1952. 39p diagr, maps, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109148

Sixth occasional report under Contract no. DA-36-039-sc-15345.
1. Atmosphere - Moisture content - Tests 2. Ice nuclei - Measurement - Mt. Washington 3. GE RL 722.

Occasional report no. 36: Production of monodisperse liquid particles by electrical atomization, by Bernard Vonnegut and Raymond L. Neubauer. Occasional report no. 37: Multiple-stag dilution of aerosols by use of aspirators, by Bernard Vonnegut, Myer Geller, and Kiah Maynard. Oct 1952. 18p photos, diagrs, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109149

Seventh and eighth occasional reports under Contract no. DA-36-039-sc-15345.
1. Aerosols - Dispersion 2. Atomization, Electrical 3. Particles - Formation. 4. GE RL 747.

Occasional report no. 38: Counting sodium-containing particles in the atmosphere by their spectral emission in a hydrogen flame, by Bernard Vonnegut and Raymond L. Neubauer. Occasional report no. 39: Effect of halogens on the production of condensation nuclei by a heated platinum wire, by Bernard Vonnegut. Oct 1952. 25p photo, diagrs, graphs (2 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109150

9th and 10th occasional reports under Contract no. DA-36-039-sc-15345.
1. Aerosols - Particle size - Measuring equipment - Design 2. Aerosols - Spectrophotometric analysis 3. Nuclear reactions 4. Halogen compounds - Effect on condensation nuclei 5. GE RL 748.

Study of ionospheric winds and turbulence utilizing long radio waves, by George H. Millman. Pennsylvania State College. Ionosphere Research Laboratory, State College, Pa. May 1952. 130p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $5.00, Photostat $16.25. PB 108585

This work is mainly concerned with the study and experimental determination of wind movements in the E-layer of the ionosphere by radio pulse techniques at a frequency of 150 Kc/sec and the statistical analysis of the fading of vertically incident pulsed 150 Kc/sec radio waves reflected from the E-layer. A discussion on the theory of wind measurements is given in which general equations are derived for calculating ionospheric wind speeds and directions utilizing three spaced-receivers randomly located. A method is discussed for obtaining heights at which ionospheric winds occur. The automatic recording equipment used in the experimental work is described in detail. Scientific report no. 37 under Contract no. AF 19 (122)-44, Ionospheric research.

MINERALS AND MINERAL PRODUCTS

Analysis of uranium-gallium alloys, an A.E.R.E. report, by G.W.C. Milner and A. J. Wood. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Nov 1952. 15p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.65. PB 109140

Cover date is 1953. S. O. code no. 70-674-1-15. HD. 806.
1. Uranium-gallium alloys - Analysis - Gt. Brit. 2. Atomic power - Research - Gt. Brit. 3. AERE C/R 1041.

Determination of the elastic constants for beta quartz, by E. W. Kammer and T. E. Pardue. U. S. Naval Research Laboratory. Dec 1947. 16p graphs, table Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. $.50. PB 111125

Adiabatic elastic constants for beta quartz given for temperatures ranging from 580°C to 800°C. Elastic moduli computed from elastic constants and compared with adiabatic and isothermal values computed by others. NRL S3207.

Development of mineral wool from Florida minerals, by A. F. Greaves-Walker and A. Philip Welch, in cooperation with the State Board of Conservation, Florida Geological Survey. Florida. Engineering and Industrial Experiment Station, Gainesville, Fla. Feb 1953. 28p photos, drawings, diagrs, map, graphs, tables Available from The Director, Florida Engineering and Industrial Experiment Station, Gainesville, Fla. PB 109402

Engineering Progress at the University of Florida, vol. VII, no. 2.
1. Mineral wool - Manufacture - Florida
2. Minerals - Uses - Florida.

Effect of iron inclusions in asbestos on electrical characteristics of insulating material: Detection of iron particles by X-radiography, by H. F. Kaiser, M. Elliot, C. T. Klee. U. S. Naval Research Laboratory. Apr 1943. 21p photos, drawing, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109285

Fine metallic particles present in fabric tapes used for electrical insulation may be detected by x-radiography using soft radiation and fine grained film, enlargements from which will show the metallic particles to better advantage than a microscope. Tests were made with this method of a number of commercial asbestos tapes and impregnated tapes used for cable wrapping. NRL M-2037.

Investigation of methods for the production of metallic potassium, by Charles A. Kraus. Brown University. Metcalf Research Laboratory, Providence, R. I. Sep 1942. 60p drawing, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 109222

1. Potassium alloys - Production 2. Potassium - Oxidation 3. Potassium sulfide - Reduction 4. U. S. Naval Research Laboratory 5. NRL P-2011.

Lightweight concrete in America, by T. Whitaker. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1953. 102p photos, drawings, diagrs, graph, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.15. PB 109356

S. O. code no. 47-550-13. Appendix: Note on the use of Portland cement paint.
1. Concrete - Uses 2. Concrete aggregates 3. Concrete - Coatings 4. Concrete - Manufacture 5. Concrete, Precast 6. DSIR NB SR 13.

Oxygen source material. U. S. Naval Research Laboratory.

Tenth partial report: Operation of pilot plant for production of mixed oxides of potassium and sodium by S. Gulbrandsen and R. R. Miller. Sep 1942. 64p photos, drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 109563

This report describes the operation of a pilot plant producing "Mixed Oxide" (potassium tetroxide and sodium peroxide). The process comprises the reaction at high temperature between fused potassium chloride and metallic sodium, followed by evaporation and combustion of the mixed potassium and sodium metal. NRL P-1931.

Twelfth partial report: Burning of potassium metal to potassium tetroxide with a DeVilbiss spray gun, by L. M. Foster. Feb 1943. 25p photos, drawings (1 fold), graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109219

This report concerns the production of potassium tetroxide by burning essentially pure potassium in the liquid state by means of an aspirator type spray gun. NRL P-1999.

Sixteenth partial report: Potassium production by a combination reduction. Distillation reaction between sodium and molten potassium salts, by C. R. Witschonke. Sep 1944. 42p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109112

The production of potassium by the reduction of molten potassium salts with sodium has been investigated on a small pilot plant scale with a view to commercial application. The potassium salts and sodium were reacted in a cylindrical vessel (3/4 cubic foot capacity) and the resulting equilibrium potassium-sodium alloy fractionally distilled through an attached 4" column packed to a depth of 32" with steel Raschig rings. Salt mixtures, using potassium chloride and potassium carbonate, and 1.0 sodium/salt ratios showed the most promise economically and chemically. NRL P-2334.

Reactions between aggregates and cement. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England.

Part II: Alakli-aggregate interaction: British Portland cements and British aggregates, by F. E. Jones. 1952. 26p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 109050

S. O. code no. 47-551-15. For Pt. I see PB 108047.
1. Cements - Effects of alkali-aggregate interactions - Gt. Brit. 2. Aggregates, Cement-bonded - Gt. Brit. 3. Concrete aggregates - Gt. Brit.
4. DSIR NB TP 15.

Part III: Alkali-aggregate interaction: The expansion bar test and its application to the examination of some British aggregates for possible expansive reaction with Portland cements of medium alkali content, by F. E. Jones and R. D. Tarleton. Oct 1952. 54p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 109146

S. O. code no. 47-551-17.
1. Cements - Effects of alkali-aggregate interactions - Gt. Brit. 2. Silicates, Alkali - Reactions - Gt. Brit. 3. Aggregates, Cement-bonded - Gt. Brit. 4. Concrete aggregates - Gt. Brit. 5. Aggregates - Expansion properties - Gt. Brit. 6. Aggregates - Porosity - Gt. Brit. 7. DSIR NB TP 17.

Synthetic gemstones, by Elizabeth B. Davids and Roy W. Tindula. U. S. Office of Technical Services. May 1953. 7p Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111163

1. Jewels, Synthetic - Manufacture 2. Sapphires, Synthetic - Manufacture 3. OTS IR 11392.

Tillsatsmedel till betong (Admixtures for concrete), by Vitold Saretok. Chalmers University of Technology, Gothenburg, Sweden. 1952. 67p photos, graphs, tables (Text in Swedish) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $3.00, Photostat $8.75. PB 109114

Summary in English. Avd. Väg-och vattenbyggnad. Byggnadsteknik 20.
1. Concrete - Additives - Sweden 2. Concrete - Mix proportions - Sweden 3. Chalmers University of Technology, Gothenburg, Sweden. Transactions no. 127.

ORDNANCE AND ACCESSORIES

Eddy current method for inspection of shell cases, by J. E. Dinger and J. O. Grantham. U. S. Naval Research Laboratory. Apr 1944. 17p photos, drawing Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109320

1. Projectiles - Cases - Magnetic inspection 2. NRL O-2282.

Transmission, reflection, and guiding of an exponential pulse by a steel plate in water. I: Theory, by M.F.M. Osborne and S. D. Hart. U. S. Naval Research Laboratory. May 1945. 45p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 109426

In this report the problem of the interaction of an underwater explosion wave with a steel plate is discussed. Particular attention is given to those aspects of the problem in which the plate can be considered as a two-dimensional wave guide. The phase velocities of the more important modes of the plate are evaluated as functions of frequency. They are used to derive the properties of the precursor, an oscillation which precedes the explosion wave as it travels along the plate. The results of the theory are compared briefly with experiment. NRL S-2563.

Utilization of fired cartride cases, by John T. Robertson. U. S. Naval Research Laboratory. Feb 1944. 14p photo, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109263

The properties and melting characteristics of fired cartridge cases have been investigated, especially in regard to contamination from the antimony and lead in the priming charge. The percentages of antimony and lead were found to be low enough so that cartridge cases sometimes may be used as a 100 per cent charge in making new cases. Fired cartridge cases are also on acceptable source of scrap for the manufacture of cast manganese bronze. The effect of antimony on the mechanical properties of manganese bronze was also studied, 0.01 per cent antimony being the maximum allowable amount. NRL M-2264.

PACKING AND PACKAGING

Heat dissipation capabilities of aluminum containers for electronic components, by M. L. Miller and V. F. Ragni. Capehart-Farnsworth Corp. Electronic Apparatus Dept., Fort Wayne, Ind. Jan 1950. 11p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109213

This report gives the necessary information to be able to design an aluminum container for electronics equipment such that the approximate operating temperature inside the container can be predicted.

PAPER AND ALLIED PRODUCTS

Beta-guaiacyl ether of alpha-veratrylglycerol as a lignin model, by Erich Adler, Bengt O. Lindgren and Ulla Saeden. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Feb 1952. 10p graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109121

Reprinted from Svensk Papperstidning 55 (1952) p. 245-255. Summaries in German and Swedish.
1. α-Glycerine (3,4-Dimethoxy phenyl)-β -Guaiacyl ether - Sweden 2. Lignin - Chemistry - Sweden 3. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 103.

Determination of ethylenediamine in cupriethylenediamine solutions, by Gunnar Gran and Carl-Ulrik Wetlesen. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1953. 2p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109129

Reprinted from Acta Chemica Scandinavica 6 (1952) p. 897-808.
1. Ethylenediamine - Determination - Sweden
2. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 112.

Nyare undersökningar över sulfitkokprocessen (Recent investigations on the sulfite cooking process), by Erik Hägglund. 1952. 14p graphs (Text in Swedish) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109125

Summary in English. Reprinted from Finska Kemistsamfundets. Meddelanden no. 3-4, 1951.
1. Sulfite process - Sweden 2. Lignin - Sulfonation - Sweden 3. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 108.

Some reactions of veratrylglycerol related to lignin chemistry, by Erich Adler and Soen Yllner. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Feb 1952. 7p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109120

Reprinted from Svensk Papperstidning 55 (1912) p. 238-244. Summaries in German and Swedish.
1. α-Glycercine (3,4-Dimethoxyphenyl) - Sweden
2. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 102.

Studies on the sulfonation of alkali lignins, by Terje Enkvist, Bo Alfredsson, and Erik Hägglund. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. 1952. 9p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.25, Photostat $1.25. PB 109127

Reprinted from Svensk Papperstidning 55 (1952) p. 588-596. Summaries in German and Swedish.
1. Lignin - Sulfonation - Sweden 2. Svenska Träforskningsinstitutet. Träkemi och Pappersteknik. Meddelande 110.

PHOTOGRAPHIC AND OPTICAL GOODS

Polishing technique for water-soluble crystals, by S. L. Slawson and R. L. Acton. U. S. Naval Research Laboratory. Feb 1953. 6p photos, drawing Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Mimeo: $.25. PB 111112

A special polishing technique for water-soluble crystals is necessary to obtain the optical quality required for studying their properties or for using such crystals in optical systems. The technique which has been developed utilizes bees-wax to hold the specimen to the drop and an alcohol as the grinding and polishing lubricant. For rough grinding, a glass plate is used as a lapping tool and garnet as the abrasive; for polishing, a specially prepared layer of beeswax is employed as the lap and aluminum oxide as the abrasive. The technique is suitable for a variety of water-soluble crystals and is readily adaptable to a wide range of specimen sizes. Specimens have been successfully polished optically flat within one millionth of an inch.

PHYSICS

General

Asymptotic solution of linear second-order hyperbolic differential equations, by Morris Kline. New York University. Washington Square College of Arts and Science. Mathematics Research Group. Dec 1952. 37p Available from Mr. S. Friedman, CRMPC, Air Force Cambridge Research Center, 230 Albany St., Cambridge 39, Mass. PB 109133

1. Equations, Differential 2. Mathematical equations and solutions.

On slow visco-plastic flow, by William Prager. Brown University. Graduate Division of Applied Mathematics, Providence, R. I. Dec 1952. 12p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108983

Contract N7onr-35801, T. O. I, NR-041-032.
1. Flow, Viscous - Theory 2. Equations, Integral 3. Solids - Plastic deformation 4. Bingham solids 5. GDAM A11-84 6. GDAM TR84.

On the use of singular yield conditions and associated flow rules, by William Prager. Brown University. Graduate Division of Applied Mathematics, Providence, R. I. Jun 1953. 17p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108985

Contract N7onr-35801, T. O. I, NR-041-032.
1. Plastic deformation - Theory 2. Flow, Plastic - Theory 3. Solids - Plastic deformation 4. Tresca's yield condition 5. GDAM A11-86/17 6. GDAM TR86.

Polarization of light in the sun's vertical for a Rayleigh atmosphere, by Kinsell L. Coulson. California. University. Dept. of Meteorology, Los Angeles, Calif. Nov 1952. 43p graphs, tables

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Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.50, Photostat $6.25. PB 108664

Scientific report no. 4 under Contract no. AF 19 (122)-239.
1. Light - Polarization 2. Light - Scattering - Theory 3. Rayleigh theory.

Scattering problems in nonrelativistic quantum mechanics. Part I: One particle in one dimension, by B. Friedman and E. Gerjuoy. New York University. Washington Square College of Arts and Science. Mathematics Research Group. 1951? 32p diagrs Available from Mr. S. Friedman, CRMPC, Air Force Cambridge Research Center, 230 Albany St., Cambridge 39, Mass. PB 109132

Research report no. CX-4. Contract no. AF 19(122)-463.
1. Quantum mechanics 2. Particles, Charged - Scattering - Mathematical analysis 3. Mathematical equations and solutions.

Solid-state and molecular theory group. Massachusetts Institute of Technology, Cambridge, Mass. Quarterly progress report no. 7 on Project N5ori-07856. Jan 1953. 57p diagrs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.75, Photostat $7.50. PB 108689

Contents: 1. Generalized self-consistent field method, by J. C. Slater. - 2. Water molecule, by G. F. Koster and H. C. Schweinler. - 3. Theory of molecular oxygen, by A. Meckler. - 4. Scattering of neutrons by O^{16}_2, by W. H. Kleiner. - 5. Configuration interaction in hydrogen fluoride, by R. E. Merrifield. - 6. Theory of the S_8 molecule, by H. Kaplan. - 7. Configuration interaction applied to the hydrogen molecule, by E. Callen. - 8. Nuclear electric quadrupole interaction in the KCl molecule, by L. C. Allen. - 9. Energy bands in chromium, by R. H. Parmenter. - 10. Simple model of ferromagnetism, by H. Statz. - 11. Equivalence of electrons and holes, by G. F. Koster. - 12. Theory of ferromagnetism, by R Kikuchi. - 13. Anti-ferromagnetism, by G. W. Pratt, Jr. - 14. Local field in a crystal lattice, by J. H. Barrett. - 15. Connection between the many-electron interaction and the one-electron periodic potential problems, by H. C. White. - 16. Study of $2Z_p$ in atoms, by A. J. Freeman. - 17. Spherical Bessel functions of half integral order and imaginary argument, by F. J. Corbato, G. F. Koster, H. C. Schweinler. - 18. Electric field gradient at nuclei of molecules, by W. H. Kleiner.
1. Molecular theory 2. Molecules - Magnetic moments 3. Molecular interactions 4. Neutrons - Scattering 5. Hydrofluoric acid - Molecular structure 6. Water - Molecular structure 7. Oxygen - Molecular rotation 8. Antiferromagnetism 9. Ferromagnetism - Theory 10. Bessel functions 11. Equations, Differential 12. Magnetic fields - Mathematical analysis.

Tabulation of the Fresnel integrals, by Robert Turner and Anne F. Downey. Harvard University. Cruft Laboratory. Mar 1953. 24p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109181

Contract N5ori-76, Task order no. 1, NR-078-011.
1. Fresnel integrals 2. Tables, Mathematical 3. HU CL TR 173.

Transition probabilities of molecular band systems. University of Western Ontario. Dept. of Physics. Contract no. AF19(122)-470.

II: Computation of vibrational transition probabilities for diatomic molecules, by W. R. Jarmain and R. W. Nicholls. Dec 1952. 19p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 108920

Scientific report no. 4.
1. Molecules - Spectroanalysis - Canada 2. Spectroscopy, Molecular - Mathematical analysis - Canada 3. Molecular theory - Canada 4. Probability - Theory - Canada.

III: Calculation of intensities in the electronic spectra of Morse molecules (I), by P. A. Fraser and W. R. Jarmain. Jan 1953. 20p Available from Library of Congress, Publication Project Board, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109075

Scientific report no. 5.
1. Molecules - Spectroanalysis - Canada 2. Spectroscopy, Molecular - Mathematical analysis - Canada 3. Molecular theory - Canada 4. Equations, Integral - Canada.

IV: Calculation of intensities in the electronic spectra of Morse molecules (II), by W. R. Jarmain and P. A. Fraser. Feb 1953. 15p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109076

Scientific report no. 7.
1. Molecules - Spectroanalysis - Canada 2. Spectroscopy, Molecular - Mathematical analysis - Canada 3. Molecular theory - Canada.

V: Collected results-N_2, N_2^+, NO, O^+_2, by W. R. Jarmain, P. A. Fraser, and R. W. Nicholls. Feb 1953. 13p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. PB 109077

Scientific report no. 8.
1. Molecules - Spectroanalysis - Canada 2. Spectroscopy, Molecular - Mathematical analysis - Canada 3. Molecular theory - Canada.

Zodiacal light eclipse project. Colorado. University. Dept. of Physics. Upper Air Laboratory, Boulder, Colo. Vol. 2: Measurements of the inner zodiacal light during the total solar eclipse of Feb. 26, 1952. Oct 1952. 26p photos, graphs, map, tables Available from Library of Congress,

Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109347

Special report no. 4.
1. Eclipses, Solar - Zodiacal light.

Nuclear

Basic algebra of the strong focussing system, an A.E.R.E. report, by J. S. Bell. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Jan 1953. 11p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 109242

S. O. code no. 70-674-1-31.
1. Equations, Linear - Gt. Brit. 2. Accelerators, Linear - Focussing - Gt. Brit. 3. Lenses - Focus - Gt. Brit. 4. Mathematical equations and solutions - Gt. Brit. 5. Atomic power - Research - Gt. Brit. 6. AERE T/R 1114.

Bibliography on fission, supplement I, covering references up to September, 1952. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Oct 1952. 9p Available from Brisith Information Services, 30 Rockefeller Plaza, New York 20, N.Y. $.45. PB 107970s

HD. 792. S. O. code no. 70-674-1-08.
1. AERE Inf/Bib 76 Supp I.

Dry box for a, b, x work, an A.E.R.E. report, by G. B. Cook and F. Morgan. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Jun 1951. 5p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.45. PB 108675

HD. 520. S. O. code no. 70-674-0-30.
1. Plutonium - Isotopes - Radiation - Protection - Gt. Brit. 2. Dry boxes - Operation - Gt. Brit. 3. Alpha rays - Protection - Gt. Brit. 4. Beta rays - Protection - Gt. Brit. 5. Gamma rays - Protection - Gt. Brit. 6. Atomic power - Research - Gt. Brit. 7. AERE C/R 724.

Electronic structure of atoms and molecules, by John C. Slater. Massachusetts Institute of Technology. Solid-State and Molecular Theory Group. Feb 1953. 216p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $7.75, Photostat $27.50. PB 109398

Technical report no. 3. O.N.R. contract N5 ori-07856.
1. Atomic structure 2. Molecular structures 3. Hartree - Fock equations 4. Heitler - London equations 5. Molecular theory 6. Atomic power - Research.

New method of measuring angular distributions, an A.E.R.E. report, by R. Batchelor and B. H. Flowers. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. Feb 1948. 11p photos, diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.55. PB 109387

A method is suggested for the investigation of angular distributions of charged particles emitted in disintegrations by the measurement, effectively, of pulse shape from an ionisation chamber; and in an experiment to test the method is described. Curves showing the variation in pulse shape with angle are presented. HD. 818. S. O. code no. 70-647-1-27. AERE N/R 166.

PRINTING, PUBLISHING

Review of the literature on aeronautical chart development and design for use under red lighting, by Joseph W. Wulfeck. Tufts College, Medford, Mass. Jul 1952. 23p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.00, Photostat $3.75. PB 109368

A brief review of previous and current research and suggestions for the design of aeronautical charts for use under red light is presented. Certain major aspects of the problem have been attacked more directly in England than in the United States. Scattered research in the United States has begun to show trends, and general interest in the problem is on the increase. AAF WADC TR 52-306.

PSYCHOLOGY

Naval, neighborhood, and national leadership. Annual technical report under Contract no. N8 onr-69401, by Douglas Courtney, F. Loyal Greer, Joseph M. Masling, Harold Orlans. Institute for Research in Human Relations, Washington, D. C. Feb 1953. 109p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.50, Photostat $13.75. PB 109087

Series 1953, Institute report no. 1.
1. Leadership 2. Authority Acceptance Scale 3. Psychological tests.

RUBBER AND RUBBER PRODUCTS

Static force-deflection characteristics of six aircraft tires under combined loading, by Walter B. Horne. U. S. National Advisory Committee for Aeronautics. May 1953. 92p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. PB 109370

Static force-deflection tests were made on six air-

craft tires. These tests included the vertical loading of the six tire specimens, combined vertical loading and side loading and combined vertical loading and torsional loading of five tire specimens, and combined vertical loading and fore-and-aft (longitudinal) loading of one tire specimen for different initial inflation pressures. Tire deflection, vertical-load center-of-pressure shifts, and tire pressure measurements are presented for the different load combinations. NACA TN 2926.

Substitution of chlorinated synthetic rubber for chlorinated rubber in the formulation of anti-fouling paints, by Allen L. Alexander. U. S. Naval Research Laboratory. Jun 1945. 38p photos, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $2.25, Photostat $5.00. PB 109339

This report describes a series of exposures to high fouling environment of a number of formulations containing both natural and synthetic chlorinated rubber. The conclusion is reached that for fouling efficiency only, the synthetic product performs equally as well as the chlorinated natural rubber. NRL P-2558.

STRUCTURAL ENGINEERING

Assessment of vibration intensity and its application to the study of building vibrations, by R. J. Steffens. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Nov 1952. 25p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.30. PB 109144

S. O. code no. 47-550-19.
1. Buildings - Vibration - Gt. Brit. 2. DSIR NB SR 19.

L-shaped stronghold fence staple, by E. George Stern. Virginia Polytechnic Institute. Wood Research Laboratory, Blacksburg, Va. Mar 1953. 20p photos, graphs, tables Available from Virginia Polytechnic Institute, Wood Research Laboratory, Blacksburg, Va. PB 109396

Publication no. 11. Investigation sponsored by Independent Nail & Packing Co., Bridgewater, Mass.
1. Staples, Wood binding.

Lightweight concrete blocks for housing. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. 1953. 4p Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.10. PB 109355

S. O. code no. 72-22-0-52.
1. Concrete construction - Gt. Brit. 2. Houses, Concrete - Gt. Brit. 3. DSIR BRD 52.

Studies in composite construction. Part I: Composite action of brick panel beams, by R. H. Wood. Gt. Brit. Dept. of Scientific and Industrial Research, Building Research Station, Watford, Eng. Mar 1952. 40p photos, drawings, graphs (1 fold), tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.50. PB 108928

S. O. code no. 47-551-13.
1. Beams, Reinforced concrete - Load distribution - Gt. Brit. 2. Walls, Brick - Load 3. DSIR NB TP 13.

Survey of building in sandstone in Scotland, by H. F. Broughton, J. R. Illingworgh and G. G. Rice. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, Eng. Jan 1953. 30p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $.40. PB 109145

S. O. code no. 47-550-20.
1. Building materials - Scotland 2. Sandstone - Use as building material - Scotland 3. DSIR NB SR 20.

TEXTILES AND TEXTILE PRODUCTS

Evaluation of Army summer uniform fabrics, by S. J. Kennedy, G. Winston, and C. J. Monego. U. S. Office of the Quartermaster General. Research and Development Division. Textile Clothing and Footwear Branch. 1953. 56p tables Available from Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C. $1.50. PB 111151

An evaluation of the suitability of seven fabrics for Army summer uniforms by means of statistically planned laboratory tests and actual wearing tests is described. The fabrics included the standard all-wool tropical worsted and six alternate constructions consisting of all-wool, all-synthetic, and blended fabrics. The laboratory tests were used to rank the fabrics on the basis of appearance, comfort, and wear. QMC TSR 71.

Textile finishing treatments: German chemical developments in improving water resistance of textiles, by Miles A. Dahlen and Raymond A. Pingree. German chemical developments in crease resistant treatments of textiles, by Raymond A. Pingree and consultants. German chemical developments in textile finishes, by Raymond A. Pingree. U. S. Army. European Theater of Operations. Office of the Quartermaster. Headquarters Theater Service Forces. n.d. 119f Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $4.75, Enlargement Print $16.25. PB 109211

1. Textiles - Chemicals - Germany 2. Textiles - Crease resistance - Germany 3. Textiles - Finishing - Germany 4. Textiles - Waterproofing - Germany 5. Textile aids - Germany 6. BIOS M18.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

Bericht über das fachgebiet interferenz vor-dem Windkanalausschuss in Februar 1945 (Report on the special field interference to the Wind-tunnel Committee in February 1945), by Hermann Schlichting. Translated by Mary L. Mahler. May 1953. 46p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109383

Translated from Aerodynamisches Institut der Technischen Hochschule Braunschweig. Bericht 45/4. Includes compilation of interference schematics at the Aerodynamic Institute of the Technical Academy, Braunschweig (Force and pressure-distribution measurements) by E. Möller. Jan 1945.
1. Wind tunnels - Interference - Germany 2. Wind tunnel tests - Germany 3. NACA TM 1347.

Deflection of delta wings having a carry-through-bay chord smaller than the wing root chord, by Roger W. Peters and Manuel Stein. U. S. National Advisory Committee for Aeronautics. May 1953. 25p photo, diagrs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109371

1. Wings, Triangular - Deflection 2. Loads, Structural - Bending 3. Loads, Structural - Torsion 4. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 5. NACA TN 2927.

Dynamics of the airframe, by F. R. Nelson, W. Koerner, R. E. Trudel. Northrop Aircraft, Inc., Hawthorne, Calif. Sep 1952. 192p diagrs, graphs, tables Available for loan from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. PB 109367

Preparation of volume sponsored by Bureau of Aeronautics, Navy Dept.
1. Stability, Dynamic 2. Airplanes - Stability 3. Airframes - Aerodynamics 4. Equations of motion 5. Transformations (Mathematics) 6. NAVSHIPS AE61-4II.

Effect of spanwise rib-boom stiffness on the stress distribution near a wing cut-out, by E. H. Mansfield. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1947. 21p diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. $1.40. PB 109362

Cover date is 1952. S. O. code no. 23-2663.

1. Ribs, Wing - Stiffness - Effect on load distribution - Gt. Brit. 2. Wings - Skin - Load distribution - Gt. Brit. 3. Wings - Stress analysis - Gt. Brit. 4. ARC RM 2663.

Electrically heated aircraft windscreens, by J. H. Millsum. Canada. National Aeronautical Establishment. Dec 1952. 19p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm $1.75, Photostat $2.50. Available for exchange from National Aeronautical Establishment, Montreal Road, Ottawa, Canada. PB 108904

This report briefly describes the development, design, and application of electrically heated glass panels primarily for anti-icing aircraft windscreens. Known sources of supply are given, together with the most recent information available on design limitations, and new developments are mentioned. It is emphasized that further investigation of heat requirements is necessary, as well as some development work to overcome present design limitations. Appendix A: Known manufacturers of electrically heated panels. - Appendix B: Known manufacturers of temperature control systems. NAEC LR43.

Experimental investigation of the effect of rear-fuselage shape on ditching behavior, by Ellis E. McBride and Lloyd J. Fisher. U. S. National Advisory Committee for Aeronautics. Apr 1953. 35p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109373

1. Fuselages - Design - Effect on landing 2. Airplanes - Ditching 3. Airplanes - Hydrodynamics 4. NACA TN 2929.

Heat and momentum transfer between A spherical particle and air streams, by Y. S. Tang, J. M. Duncan and H. E. Schweyer. U. S. National Advisory Committee for Aeronautics. Mar 1953. 48p photo, diagrs, graphs, table Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109100

1. Heat - Transference - Theory 2. Airplanes - Skin - Friction 3. Reynolds number - Effect 4. Gases - Thermodynamic properties 5. Florida. University. Dept. of Chemical Engineering, Gainesville, Fla. 6. NACA TN 2867.

Interim report on a fatigue investigation of a full-scale transport aircraft wing structure, by M. James McGuigan, Jr. U. S. National Advisory Committee for Aeronautics. Apr 1953. 36p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109351

1. Aircraft - Structure - Stress analysis 2. Gust loads 3. Connections, Riveted - Fatigue 4. Air-

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planes - Materials - Stress analysis 5. Wings - Fatigue 6. Loads, Structural - Theory 7. U. S. Langley Aeronautical Laboratory, Langley Field, Va. 8. NACA TN 2920.

Investigation of lateral control near the stall. Flight investigation with a light high-wing monoplane tested with various amounts of washout and various lengths of leading-edge slot, by Fred E. Weick, Maurice S. Sevelson, James G. McClure and Marion D. Flanagan. U. S. National Advisory Committee for Aeronautics. May 1953. 61p photos, diagrs Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109382

1. Stability, Lateral - Tests 2. Wings, Slotted - Tests 3. Texas. Agricultural and Mechanical College, Colllege Station, Texas 4. NACA TN 2948.

Lift developed on unrestrained rectangular wings entering gusts at subsonic and supersonic speeds, by Harvard Lomax. U. S. National Advisory Committee for Aeronautics. Apr 1953. 44p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1724 "F" St., N. W., Washington 25, D. C. PB 109353

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